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OR,

Universal Dictionary

ARTS, SCIENCES, AND LITERATURE.

OF

ARTS, SCIENCES, AND LITERATURE.

VOL. XVIII.

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OF

Arts, Sciences, and Literature.

BY

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

WITH THE ASSISTANCE OF

EMINENT PROFESSIONAL GENTLEMEN.

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IN THIRTY-NINE VOLUMES.

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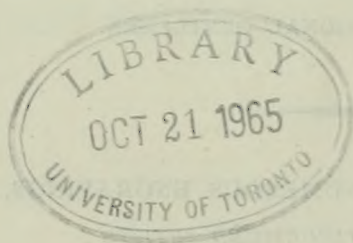
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Arts, Sciences, and Literature

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CYCLOPÆDIA:

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OF

ARTS and SCIENCES.

HIBISCUS.

HIBISCUS, in *Botany*, *ἰβίσκος*, a Greek name, of unknown derivation, for the *αἰθύσις* of Theophrastus, supposed to be the Marsh Mallow, or something very near it; hence the word was chosen by Linnæus to designate a genus of that family, which had hitherto received only barbarous or ill-constructed appellations.—Linn. Gen. 356. Schreb. 468. Willd. Sp. Pl. v. 3. 806. Mart. Mill. Dict. v. 2. Ait. Hort. Kew. v. 2. 454. Cavan. Disc. fasc. 3. 143. Juss. 273. Lamarck. Illustr. t. 584. Gærtn. 134 (Ketmia; Tourn. t. 26.)—Class and order, *Monadelphica Polyandria*. Nat. Ord. *Columnifera*, Linn. *Malvacea*, Juss.

Gen. Ch. *Cal.* Perianth double; the outer permanent, of many linear, sometimes spatulate, leaves, rarely united into one at their base; inner of one leaf, cup-shaped, either five-cleft half way down and permanent, or with five teeth only and deciduous. *Cor.* Petals five, roundish-oblong, narrowest at the base, spreading, attached below to the tube of the stamens. *Stam.* Filaments numerous, connected in their lower part into a tube, in whose upper part, both at its summit and sides, they become separate and lax; anthers kidney-shaped. *Pist.* Germen superior, roundish; style thread-shaped, longer than the stamens, five-cleft in its upper part; stigmas five, capitate. *Peric.* Capsule of five cells and five valves; the partitions double, contrary to the valves. *Seeds* one or more in each cell, kidney-shaped inclining to ovate.

Eff. Ch. Calyx double; the outer of many leaves or segments. Stigmas five. Capsule of five cells, with several seeds.

The species constituting the genus *Hibiscus* are a numerous tribe of the largest and finest plants of the malvaceous order. They are 36 in Syst. Veg. ed. 14th, 66 in Willdenow; yet of the former *H. præmorsus*, *spinifex*, *cancellatus*, and *zeylanicus*,

are removed to the new genus *Pavonia*, and *H. Malvarifolius* to the *Achania* of Banks and Solander, well marked by its convoluted corolla, ten stigmas, and pulpy fruit; see *ACHANIA*.—Scarcely any of them are natives of Europe. They generally grow between the tropics, yet some are found in North America, and some have been brought from the Cape of Good Hope. Though so numerous, they are not capable of being distributed into any well-defined sections or subdivisions.—The stem is generally shrubby or arboreous; rarely herbaceous with an annual root, and still more rarely so with a perennial one. Leaves alternate, stalked, simple, more or less lobed, with a pair of narrow stipulas at the base of the footstalk. Pubescence generally soft and stellated, sometimes bristly and simple, sometimes wanting; in *H. populneus* scaly, but this was, with great reason, thought a distinct genus by Dr. Solander. Flower-stalks axillary or terminal, all simple and single-flowered. Corolla usually large, red, purplish, or yellow with more or less of a purple spot, for the most part very ornamental; sometimes variable according to the age of the flower. The fibres of the stem are tenacious like hemp, and the juices of the whole plant very mucilaginous, sometimes accompanied by an unpleasantly scented secretion. We do not recollect any fragrance in the blossoms, at least of those few which it has fallen to our lot to examine alive in the gardens or stoves of Europe.—The following are among the species most worthy of notice.

H. palustris. Linn. Sp. Pl. 976. Curt. Mag. t. 882. Cavan. Diff. t. 65. f. 2.—Stem herbaceous, quite simple. Leaves ovate, partly three-lobed, downy beneath. Flower-stalks distinct from the foot-stalks.—Native of marshes in North America; hardy in our gardens, but scarcely flowering

B

HIBISCUS.

flowering without some artificial heat. The root is perennial. Stems annual, about two feet high, perfectly unbranched, leafy, round, and nearly smooth. Leaves three or four inches long, two or three broad, pointed, ovate, serrated, often with two small lateral points or lobes; smooth above; finely hoary beneath. Flowers large, rose-coloured, darker in the centre. Stamens and pistil yellow. Stigmas very large and globose. The flower-stalks are truly axillary, not united for some distance to the footstalk of the leaf, by which it is supposed to be distinguished from *H. Moscheutos*; but we think, with Dr. Sims in Curtis's Botanical Magazine, that these two species are hardly to be considered as more than varieties. The latter is represented in Cavan. Diff. t. 65. f. 1, whatever may be the *Alcea rosea peregrina*, forte *Rosa moscheutos Plinii*, Cornut. Canad. 144. t. 145.

H. tiliaceus. Linn. Sp. Pl. 976. Cavan. Diff. t. 55. f. 1. (Pariti; Rheede Malab. v. 1. 53. t. 30. Novella; Rumph. Amb. v. 2. 218. t. 73.)—Leaves roundish-heart-shaped, undivided, pointed, crenate. Stem arboreous. Outer calyx in ten segments united half way up.—One of the most common trees in every part of the East Indies, thriving in all sorts of situations and soils, and cultivated for the sake of its shade, even more than the beauty of its flowers, in towns and villages, and by road sides. The foliage resembles that of the Carolina Lime, *Tilia pubescens*. The flowers expand in an evening, and are pale yellow, with a dark purplish stain in the bottom. A coarse cordage is made of the bark; the wood is light and white, useful for small cabinet work; the mucilage of the whole plant is applied to some medical purposes.

H. Rosa-Sinensis. Linn. Sp. Pl. 977. Sm. Spicil. 7. t. 8. Curt. Mag. t. 158. Cavan. Diff. t. 69. f. 2.) Schem-pariti; Rheede Malab. v. 2. 25. t. 17, with a double flower, as is also *Flos festalis*; Rumph. Amb. v. 4. 24. t. 8.)—Leaves ovate, pointed, serrated, smooth. Stem arboreous.—The native country of this species is uncertain, but no plant is more generally cultivated in China and the East Indies for ornament, especially the double-flowered kind, which is used on all occasions to decorate the houses, temples, &c., as roses are in England. Their shape and brilliant red colour have acquired them the appellation of the China Rose. The single flower, with its long pendulous column of stamens, and vivid crimson stigmas, is in our opinion much more elegant than the double, but is rarely seen in collections, though the latter is considered as almost essential to every hot-house. The tree is said to be as large as a hazel. The leaves are of a fine green, and smooth. Flowers large, crimson. They serve the Europeans in India for the ignoble purpose of blacking their shoes, being rubbed upon the leather, which, when it has received a sufficient degree of colour, is polished with the hand.

H. mutabilis. Linn. Sp. Pl. 977. Andr. Repof. t. 228. Cavan. Diff. t. 62. f. 1. (Rosa-Sinensis; Ferrari Flor. 479. t. 485—499. Merian. Surin. 31. t. 31. Hina-pariti; Rheede Malab. v. 6. 69. t. 38—42.)—Leaves heart-shaped, angular, five-lobed, pointed, toothed. Outer calyx of eight leaves. Capsule villose. Stem arboreous.—Native of China, Japan, and various parts of the East Indies, where, as well as in the West Indies, it is much cultivated for the beauty of its flowers, most generally double, which are white at first opening in the morning, but become rose-coloured before they fade at night. The leaves somewhat resemble those of the vine, and are roughish, variable in the length of their points. Ferrari and Rheede have illustrated this fine plant by an unusual profusion of plates in their several splendid works.

H. syriacus. Linn. Sp. Pl. 978. Curt. Mag. t. 83.

Cavan. Diff. t. 69. f. 1. (*Alcea arborefcens*; Camer. Hort. t. 3, 4. *Althæa arborefcens*; Ger. em. 933. *A. frutex*; Park. Parad. 369. t. 367. f. 5.)—Leaves ovate, somewhat wedge-shaped, three-lobed, cut, smooth. Outer calyx of about eight leaves, as long as the inner. Stem arborefcens.—Native of Syria and Carniola; a hardy shrub in our gardens, where it is popularly known by the name of *Althæa frutex*. It is perhaps the last shrub that comes into leaf with us, and one of the latest in flowering. The blossoms are handsome, rose-coloured with a crimson eye, produced in abundance, and liable to variations in colour which render them still more desirable. They have no scent.

H. liliiflorus. Cavan. Diff. t. 57. f. 1.—Leaves obovate, entire, bluntish, ribbed, smooth; occasionally three-lobed. Outer calyx five-cleft, very short. Stem arboreous.—Gathered on the woody mountains of the Isle de Bourbon by Commerfon, who, thinking it a distinct genus, intended to call it *Cremontia*. The above characters mark it sufficiently. The flowers are large, not much expanded, purplish, externally silky and whitish. Few of the genus are more striking either in their blossoms or foliage.—The French call it *Fleur de St. Louis*.

H. speciosus. Ait. Hort. Kew. v. 2. 456. Curt. Mag. t. 360.—Leaves deeply palmate, smooth: their segments lanceolate, somewhat serrated. Stem, stalks, and calyx smooth.—Native of Carolina, nearly hardy with us, being perennial, with an annual herbaceous stem. The flowers are peculiarly showy, being of a rich scarlet, and larger than most of their family.

H. Abelmofchus. Linn. Sp. Pl. 980. Cavan. Diff. t. 62. f. 2. (Flos moschaty; Merian. Sur. 42. t. 42.)—Leaves with seven angles, serrated; somewhat peltate and heart-shaped at the base. Stem bristly.—Native of the East and West Indies, chiefly remarkable for the rich musky taste of its seeds, known by the name of *Bammia moschata*, for which they are cultivated in the East. The plant is shrubby, very hispid. Leaves very deeply divided. Flowers large, yellow. Capsule two or three inches long.

H. Trionum. Linn. Sp. Pl. 981. Curt. Mag. t. 209.—Leaves in three very deep divisions, cut, somewhat pinnatifid. Calyx inflated, membranous, hairy.—The beautiful Venetian Mallow, or Flower of an hour, is one of the few European species of *Hibiscus*, and also one of the few that are annual. It is commonly cultivated for the elegance of the flowers, which are sulphur-coloured, with five purple external stripes, and a violet eye, contrasted with the yellow anthers. The purple hairy stigmas too are remarkable, as well as the bladderly hispid inner calyx.

HIBISCUS, in Gardening, contains plants of the shrubby and flowering exotic sorts, among which the species chiefly cultivated are, the Syrian shrubby hibiscus, or althæa frutex (*H. syriacus*); the bladder hibiscus, bladder ketmia, or flower of an hour (*H. trionum*); the China rose hibiscus (*H. rosa sinensis*); and the changeable rose hibiscus (*H. mutabilis*), or Martinico rose.

The first species has several varieties, as with pale purple flowers, having dark bottoms; with bright purple flowers, and black bottoms; with white flowers, and purple bottoms; with variegated flowers and dark bottoms, termed *painted lady althæa frutex*; with pale yellow flowers, and dark bottoms; and with variegated leaves, and double flowers.

And of the second species there are varieties, with erect purplish stems, and larger flowers, with a deeper colour; and with large paler-coloured flowers.

The last species has also a variety with double flowers, from which the single is often produced; but the seeds

of the single rarely afford plants that vary to the double sort.

Method of Culture.—The first species is capable of being multiplied either by seeds, layers of the branches, or cuttings of the young shoots.

In raising them by seed, it should be procured from abroad, and be sown in the early spring season, either in pots filled with light earth, or on a border in a warm exposure; but the former is the better method. The pots must be plunged in a gentle hot-bed, in order to bring the young plants forward. Afterwards the plants should be watered during the summer season in a moderate degree, and be protected in the winter from the effects of frost.

After the plants have had the growth of about two years they may be planted out in nursery rows, or in the places where they are ultimately to grow.

Where the layer mode is employed, the branches should be laid down into the ground in the autumnal season, nicking the shoots on the back parts at one or two of the joints, and placing them well in the earth. They mostly become pretty well rooted in the course of ten or twelve months, at which time they may be taken off, and placed out in their situations.

In using cuttings the young shoots should be preferred, which should be planted in pots of light earth early in the spring, plunging them in a mild hot-bed. They may also be planted in a shady border in the summer season. As soon as the plants are become fully rooted, they should be taken up with great care, and planted out where they are to grow, which may be done either during the autumn or in the spring.

The second species may be increased by sowing the well-ripened seeds in the autumn or spring, in patches of several seeds together, in the situations in which they are designed to grow and flower. As soon as the plants are come up, and have attained some growth, they should be thinned out to two or three plants in each patch.

The last two species are also capable of being multiplied, by sowing the seeds, when perfectly ripened, in the early spring in pots of rich light earth, plunging them directly in a moderate hot-bed, under glass frames, or, which is much better, in the bark-bed of the hot-house. As soon as the plants have made their appearance, and acquired some few inches in growth, they must be removed separately into small pots, giving them water freely, and then replunging them in the hot-bed, where they are to be preserved.

In some cases they are likewise capable of being raised by planting cuttings made from the young shoots in pots filled with the same sort of mould, either in the spring or summer, affording them water immediately, and then placing them in the bark hot-bed. The after-management is the same as in the other sorts.

The first two species, which are hardy, afford an excellent effect in the clumps and borders, in intermixture with other plants of the flowery sort; while the last two, which are tender, display considerable variety in collections of the stove and conservatory kinds, by the beauty of their flowers.

HIBISI, in *Geography*, a town of Asiatic Turkey, in Caramania; 80 miles W. of Satalia.

HIBRAHIM, or **ST. MARY**, an island in the Indian ocean, near that of Madagascar; 50 miles long and 14 wide. S. lat. 16° 56'. E. long. 51° 56'.

HIBRETPOUR, a town of Hindoo-stan, in Labore; 27 miles N. of Firozpour.

HICETAS, the Syracusan, in *Biography*, an ancient philosopher and astronomer, who flourished at an unknown period. He was probably the first person who taught that the sun and stars were fixed and permanent bodies, and that the earth had a rotatory motion. It is even said that Copernicus derived from this philosopher the first hint of his true system of the universe.

HICHATAS, in *Geography*, a town of West Florida, near the Apalachicola. N. lat. 31° 43'. W. long. 85°.

HICK, in *Nautical Affairs*, signifies the handle or lever of the rudder of a barge, called also the tiller.

HICKERY, in *Geography*, a town of America, in the state of Pennsylvania, on the Alleghany; 20 miles N. E. of Fort Franklin.

HICKES, GEORGE, in *Biography*, was born at Newsham, in Yorkshire, in the year 1642. He was educated at North-Allerton, from whence he was admitted a servitor at St. John's college, Oxford. Soon after the Restoration, he removed to Magdalen college, where he took the degree of B.A., 1662. He went to Lincoln college in 1664, was elected fellow, and in the following year commenced M.A. was admitted to holy orders, and undertook the office of a tutor to the college, the duties of which he discharged with great reputation till the year 1673, when he was obliged to seek for some change, in order to recruit his health, which had been injured by severe labour. He accompanied Sir George Wheeler in a tour on the continent, and at Paris he learnt that it was the intention of the court to revoke the edict of Nantz. In 1675 he returned to Oxford, obtained some preferment, and was soon after appointed domestic chaplain to the duke of Lauderdale, whom he attended to Scotland. Here he accepted the degree of doctor of divinity. From this period he received other preferments in the church, and among others, the deanery of Worcester, and would probably have been made bishop of Bristol, but the death of the king, while the subject was in agitation, put an end to all his future hopes of ecclesiastical promotion. He had already discovered great zeal against the principles of popery, that he could expect no favour from James II.; nevertheless, he was so much of a churchman, and so steadily attached to the Stuart family, that he refused to take the oaths of allegiance to king William and queen Mary, was suspended, and in 1690 was deprived of his benefices. Before he quitted possession, however, upon seeing it announced in the Gazette that the deanery of Worcester was granted to Mr. William Talbot, he drew up a claim of right to it, which, in 1691, he fixed up, in his own hand-writing, over the great entrance into the choir. This paper was called by the secretary of state "Dr. Hickes's manifesto against the government," and drew upon the author a prosecution from the officers of the crown. This he anticipated, and very wisely quitted the country for concealment in the metropolis. Here and in its neighbourhood he remained unmolested till the year 1699; when the lord high chancellor Somers, out of regard for his great erudition, and as an encouragement to him in writing his dictionary of the old Northern languages, procured an act of council, by which the attorney-general was ordered to enter a *noli prosequi* to all proceedings against him. He died in 1715, in the seventy-fourth year of his age. His principal works were "Institutiones Grammaticæ Anglo-Saxonicæ et Mæso-Gothicæ," 4to; and "Antiquæ Literaturæ Septentrionalis, Libri duo", folio. This last is reckoned the author's master-piece, and is still held in high estimation. He was author of three volumes of sermons, and of a multitude of tracts in defence of himself, and the other non-jurors and their principles, an account of which may be found in the

the *Biographia Britannica*. Dr. Hickes was unquestionably a man of great learning, and very conversant in the writings of the Christian fathers, whom he regarded as the best expofitors of the fcriptures. Of his integrity he afforded abundant evidence, by the facrifices to which he fubmitted, rather than fuffer his confcience to be violated, and his moral conduct is faid to have been unexceptionable and exemplary. *Biog. Brit.*

HICKES'S Bay, in *Geography*, a bay on the N.E. coaft of New Zealand, difcovered by Capt. Cook in 1769, fo called from Mr. Hickes, the lieutenant of the *Endeavour*; 14 miles W.N.W. of Cape Runaway.

HICKES'S Keys, a cluster of iflets and rocks, in the bay of Honduras, near the coaft of Mexico. N. lat. 17° 10'. W. long. 88° 54'.

HICKFORD, in *Biography*, an English dancing-mafter, whofe fchool-room, in Brewer's-ftreet, fucceeded that in York-buildings for benefit concerts and mufical performances, during the early part of the laft century.

In 1731, Geminiani Martini, the celebrated performer on the hautbois, and Arrigoni, the lutinift, had a weekly fubfcription concert at Hickford's room; where Caroborelli, Dubourg, Clegg, and Veracini had likewife their benefits, as had all the fecond-rate opera fingers. About the year 1744, Hickford himfelf eftablifhed a weekly fubfcription concert, of which Fefting was the leader, Vincent the hautbois, Wiedman the German flute, Miller the baffoon, Coperale the violoncello, and Frafi, with fome other Italians from the opera, the fingers.

This concert continued in high favour till the deceafe of Fefting and eftablifhment of Giardini in this country.

HICKMAN, in *Geography*, a fettlement of America, in Fayette county, Kentucky, on the N. fide of Kentucky river; 10 miles N. of Danville.

HICKSFORD, a poft-town of America, in Greenville county, Virginia; 209 miles from Washington.

HICKUP, *HICCOCK*, or *Hiccough*, in *Medicine*, terms which have probably originated from the peculiar found iffued in the affection which they are ufed to denote, fignify a rapid, convulfive, and fonorous infpiration, effected by the motion of the diaphragm, and generally connected with irritation of the ftomach. It is the *λυγμός* or *λύγος* of the Greeks, and the *ſingultus* of the Latins.

This troublefome fpafmodic affection is too well known to require any minute defcription here. Some have confidered it as a diforder of the ftomach excluſively; while others more correftly aſfert, that the action of the diaphragm is principally concerned in producing it. It is obvious, indeed, that the peculiar difſyllabic found, produced during the fpafm, commonly ariſes from an affection of ſome of the organs of refpiration, and this is not leſs obviously the diaphragm. This fpafmodic contraction of the diaphragm, however, is moſt excited in confequence of ſome irritation within the ftomach, and eſpecially about the upper orifice or cardia. Thus a large quantity of food, taken without drinking, or a ſmall portion of very dry food, ſuch as bread, will often bring on the hickup; but it is ſpeedily appeaſed, in ſuch caſes, by a draught of any liquid. Diſtenſion of the ftomach, by a very copious meal, or by food imperfectly masticated, will alſo frequently induce a hickup; which, of courſe, is eaſily prevented by an oppoſite courſe, temperance, and ſlow eating. Certain acrid ſubſtances, ſwallowed, or generated in the ftomach, are apt to excite the convulfive action of the diaphragm; which conſtitutes hickup. Thus various ſpices, eſpecially when taken copiouſly, and other pungent matters, ſuch as garlic, &c.

often produce it; and the acids, and other irritating fluids, which reſult from imperfect digeſtion, and occaſion a ſenſe of heat and uneaſineſs about the cardia, or heart-burn, frequently alſo excite hickup.

On the other hand, hickup is often obſerved to ariſe from the oppoſite ſtate of the ſtomach to that of over-diſtenſion, namely, from inanition. It is not ſo eaſy to account for this variety of the diſorder, unleſs we ſuppoſe that the fluids, ſecreted within the ſtomach, become, during its empty ſtate, a ſource of irritation adequate to excite the ſympathetic action of the diaphragm. Hickup is alſo apt to occur, after great evacuations by purging and vomiting, as in cholera, and after hemorrhages. And it often accompanies inflammation, or other ſevere irritation, in the viſcera, eſpecially thoſe of the abdomen, in phrenitis, or inflammation of the brain, in apoplexy, in obſtructions of the bowels, &c. It is very common in almoſt all diſorders of the organs connected with digeſtion: thus it is generally one of the ſymptoms of a ſcirrhous ſtate of the liver; and is ſometimes found in ſimple jaundice, in which the biliary ducts are obſtructed, although the liver itſelf is found. Sometimes it is one of the fore-runners of the epileptic paroxyſm. Heberden's Comment.

From ſome one or other of theſe cauſes, hickup will ſometimes continue to diſtreſs the patient, not only for ſeveral months, but even for ſome years, at times with great conſtancy, and at other times with conſiderable intermiſſions. In ſome inſtances, this troubleſome ſymptom has been known to haraſs a perſon during the ſpace of many months, without any other ſigns of ill health. (See Heberden, Comment. De Morbor. Hiſt. et. Curat. cap. 81.) The final cauſe of the hickup has been ſuppoſed to be the removal of any irritating ſubſtance from the lower part of the œſophagus, or from the upper orifice of the ſtomach to a leſs ſenſible part of that organ by the concuſſion of the whole.

The hickup, in its moſt ordinary form, where no particular diſeaſe is preſent, is a trifling affection; but when it is a ſymptom of other diſeaſes, and eſpecially of acute or febrile diſeaſes, it is often itſelf a ſevere complaint, by the irritation which it produces, and very often indicative of danger, or of the approach of diſſolution. Hippocrates has founded ſeveral of his prognollic aphoriſms upon this ſymptom. In inflammation of the bowels (enteritis), in long continued colic, in ſtrangulated hernia, in ſtricture of the rectum, intus-ſuſceptio, or other impediment to proper evacuation of the canal, hickup enſues towards the cloſe of the diſeaſe, and, when accompanied by great fulneſs and tenſion of the abdomen, with debility of the pulſe, languor, and proſtration of ſtrength, is to be conſidered as a moſt unfavourable ſymptom. In all acute fevers it is an unpleaſant ſymptom, implying generally a morbid condition of the abdominal viſcera or of the brain; which it is to be apprehended will terminate unfavourably. The ſymptom, however, has ſometimes preceded a favourable change of the fever; ſo that the older phyſicians have remarked, that an exception from its indication of danger ariſes, when appearances of an approaching criſis concur with it. Hippocrates obſerves that hickup is a bad ſymptom in old people after a ſevere purging. (Aphoriſm 41. ſect. 7.) It is unfavourable, indeed, after every ſevere evacuation of this fort; but more particularly in the aged, whoſe ſtrength is neceſſarily impaired. He remarks, too, that hickup is a bad ſymptom in inflammation of the liver (Aph. 58. ſect. 5—17. ſect. 7), and that a ſneezing, ſupervening during a hickup, removes it. Aph. 7. ſect. 6.

It is scarcely necessary to speak of the cure of hickup, since it is either so slight an affection, in general, as to require no medical assistance, on the one hand; or a symptom of some other disease, to which our attention must be chiefly directed, on the other. In the former case, it usually ceases spontaneously in a short time, or is readily removed by a little warm fluid, as tea, coffee, and the like. When it arises from over-distention of the stomach by a too copious supply of food, or from the use of certain spices or other acrid substances, it will be in the patient's power to avoid any return of it in future from the same causes. When the hickup is more permanent and troublesome, moderate doses of the antispasmodics will commonly relieve it; probably by blunting the sensibility of the nervous coat of the stomach, and invigorating its muscular fibres. Thus a little opium or conium (cicutâ of the old pharmacopœias), or a few drops of the tincture of opium and of sulphuric ether, will frequently remove the paroxysm at once. When the hickup appears to be connected with the generation of acid in the stomach, it may be alleviated by magnesia, chalk, and the alkaline waters, at the same time, a light and moderate diet, with occasional laxatives, and aromatic bitters, may be used with a view to unload and strengthen the stomach. This, like many other spasmodic actions of muscular parts, may be often removed by drawing the attention of the patient strongly to any particular object, or by exciting any mental emotion; a fact, which popular observation has evinced. When the hickup is merely a symptom of some other disease, the treatment of it is a matter of very secondary importance; our efforts being of necessity directed chiefly to the removal of the primary disease, with the cessation or alleviation of which the hickup will of course cease or be alleviated, according to the old maxim, "sublatâ causâ tollitur effectus." The treatment of such primary diseases will of course be elsewhere detailed. See Sennertus, Med. Pract. lib. iii. part 2. sect. 2. cap. 10. Hoffmann, Syst. Med. Rat. Heberden, Comment. cap. 81. Sauvages, Nosol. Method.

HICKWALL, in *Ornithology*, the name of a small species of wood-pecker, called by authors *picus varius minor*; a small bird of not above an ounce weight, very beautifully variegated with black, white, and brown. The head in the female of this species has a white spot on the crown, and in the male a red one. It climbs trees like the common large wood-pecker, and like it feeds on worms and other insects which it finds there. See *PICUS Minor*.

HID Island, in *Geography*, an island of the N.W. territory of America, in Plain river, the northern head-water of the Illinois.

HIDAGE, or **HYDAGE**, an extraordinary tax, anciently payable to the king for every hide of land. See **HIDE**.

"Sunt etiam quædam communes præstationes, quæ servitia non dicuntur, nec de consuetudine veniunt, nisi cum necessitas intervenerit, vel cum rex venerit; sicut sunt hidagia, coragia, & carvagia, & alia plura de necessitate, & ex consensu communi totius regni introducta, & quæ ad dominum non pertinent," &c. Bracton, lib. ii. cap. 6.

King Ethelred, in the year of Christ 994, upon the landing of the Danes, at Sandwich, taxed all his lands by hides. Every 310 hides of land, on this occasion, found one ship furnished; and every eight hides found one jack and one saddle, for the defence of the realm. William the Conqueror took six shillings for every hide of land in England.

HIDAGE is also used for being quit of that tax; otherwise called *hide-gild*.

HIDALGO, *q. d. a son of birth*, in *Modern History*, a title given in Spain to all who are of noble family.

HIDDE, in *Geography*, a town of Arabia; 10 miles E. of Jidda.

HIDDENSON, an island in the Baltic, near the W. coast of Usedom, about ten miles long and two broad. N. lat. $54^{\circ} 35'$. E. long. $13^{\circ} 10'$.

HIDE, in *Commerce*, the skin of a beast; particularly that of a bullock, cow, or horse. See **SKIN** and **TANNING**.

We have hides of divers denominations, according to their state, quality, &c.

HIDE, Curried, is that which, after tanning, has passed through the currier's hands, and has thus received its last preparation, and is fitted for use. See **CURRYING**.

HIDE, Raw, or **Green Hide**, is that which has not undergone any preparation; being in the same condition as when taken off the carcase.

HIDE, Salted, is a green hide, seasoned with sea-salt and alum, or salt-petre, to prevent its spoiling and corrupting, either by keeping it too long in cellars, or in transporting it too far in a hot season.

There are also hides dried in the air, sent from America; particularly those of buffalos.

HIDE, Tanned, is a hide either green, salted, or dried, farther dressed and prepared by the tanner, by paring off the hair, and steeping it in pits of lime and tan. See **TANNING**.

Tanned hides are commonly carried along with the artillery of an army. They are used in the fire-workers stores, for covering powder or charged bombs from the rain or from sparks of fire. They are also used on batteries, or in a laboratory.

HIDE, or Hyde, Hyda, in our *Ancient Customs*, denoted a measure or quantity of land, containing so much as could be yearly tilled with a single plough.

Beda calls the hide of land *familia*, and defines it to be so much as was sufficient for the ordinary maintenance of one family. In other authors it is called *mansum*, *mansio*, *carucata*, &c.

Crompton, in his *jurisdict.* fol. 322, says, a hide of land contains one hundred acres, = 10 acres = 10 square furlongs = 4 virgates = 8 bovates or ox-gangs = 8 nooks = 200 obolata = 400 roods = 16,000 perches or poles = 1000 square chains = 100,000 square staves = 10,000,000 square links = 484,000 square yards = 1,742,400 square paces = 4,356,000 square feet, &c.: he adds, that eight hides make a knight's fee. In ancient manuscripts, the hide is fixed at 120 acres. But Sir Edward Coke notes, that a knight's fee, a hide or plough-land, a yard-land, and an ox-gang of land, do not contain any certain determinate number of acres. See **CARRUCATE**.

The distribution of England into hides of land is very ancient, there being mention made of it in the laws of king John, cap. 14. "Henricus I. maritand. filiz suæ gratia imperatori, cepit ab unaquaque hida Angliæ tres sol." Spelman. See **SUBSIDY**.

HIDE, in *Geography*, a river in America, which runs into the Mississippi, N. lat. $43^{\circ} 24'$. W. long. $92^{\circ} 2'$.

HIDE and Gain, in our *Old Writers*, signified arable land; to gain the land being as much as to till it.

HIDE-bound, a disorder of a horse or other beast, wherein his skin sticks so tight to his ribs and back, as not to be loosened from it with the hand.

The disorder is sometimes owing to poverty and bad keeping; at other times to over-riding or a surfeit, the horse being suffered when he is hot to stand long in the wet; or to a morbid dryness of the blood, which, not having its natural

natural course, causes the skin to shrink up and cleave to the bones.

Among *Husbandmen*, trees also are said to be hide-bound when the bark sticks too close.

HIDE-bound Land, in *Agriculture*, a term used in some districts to denote tough, poor sward land, which has mostly been badly laid down to grass.

HIDEL, in our *Ancient Statutes*, signifies a place of protection or sanctuary.

HIDGILD, or **HIDEGILD**, in the laws of king Canute, is explained by *pretium redemptionis servæ*; the price by which a servant was to redeem his skin from being whipped.

The word is formed from the Saxon *hide*, skin, and *gild*, payment. "Si liber festis diebus operetur perdat libertatem; si servus corium perdat vel hidgildum:" i. e. let him be whipped (which was the punishment for servants), or let him pay for his skin; by which payment he is to be excused from whipping.

HIDRA, in *Geography*, a town of Africa; 110 miles W.S.W. of Tunis.

HIDRO, a mountain of Naples; 15 miles W.S.W. of Otranto.

HIDROA, ἰδρῶς, in *Medicine*, from ἰδρῶς, sweat, signifies an eruption of miliary pustles on the skin, occurring chiefly during the summer, in the south of Europe. The complaint was entitled *sudamina* and *papule sudoris* by the Romans, *sudor* signifying also sweat; whence we may infer their opinion of its connection with the perspiration, which the hot season produced. It appears to be nearly the same disease as that which occurs in tropical climates during the hottest months, especially to European settlers, and is denominated, from the sensation accompanying it, the *prickly heat*. See **HEAT**, *prickly*.

HIDROCRITICA, a term used to express the judgments passed by physicians on their patients, on observing the sweats that have attended the disease.

HIDRONOSOS, a name given, by some authors, to that terrible disease the *sudor Anglicanus*, or sweating sickness.

HIDROPYRETOS, of ἰδρῶς, sweat, and πυρετός, fever, the sweating fever, a name given by some to the *sudor Anglicus*, or sweating sickness.

HIDROTICS, or **HYDROTICS**, in *Medicine*, the same with sudorifics.

The word is composed of the Greek ἰδρῶς, sweat.

Contraÿerva, zedoary, guaiacum, angelica, &c. are of the number of hidrotics, or hidrotic medicines.

HIELM, in *Geography*, a small island of Denmark, in the Cattegat, near the coast of Jutland. N. lat. 56° 8'. E. long. 10° 49'.

HIELMAR, a lake of Sweden, in the province of Sudermanland, about 70 miles in circumference; 60 miles W. of Stockholm.

HIEMALIA, in *Antiquity*, the same with brumalia.

HIEN, in *Geography*, a town of China, of the third rank, in the province of Pe-tche-li, 12 miles S. of Ho-kien.

HIEN-YAN, a town of China, of the third rank, in Chan-fi; 12 miles W.S.W. of Si-ngnan.

HIEOU-KI, a town of China, of the third rank, in Fo-kien; 26 miles S. of Yen-ping.

HIEOU-NHING, a town of China, of the third rank, in Hou-quang; 40 miles S. of Ou-tchang.

HIERA, in *Ancient Geography*, one of the Cyclades, an island of the Archipelago, situated between Thera and Therasia. This island, called the "Sacred island," was dedicated to the gods of hell, because it had been seen to issue, all on fire, from the bottom of the sea, as the effect of

a volcano. Pliny says that this event took place 130 years after that which had separated Thera from Therasia. M. de Choiseul affirms, according to father Hardouin, that there is a mistake in the dates, and that it was not till 40 years after that the island of Hiera made its appearance. In the year 196, B. C., says Justin (l. xxx. c. 4.), there was seen to issue, after an earthquake, an island between Thera and Therasia, which was called "Sacred," and which was dedicated to Pluto. Dion Cassius mentions the sudden appearance of a small island near that of Thera, during the reign of Claudius. Syncellus mentions it in the 46th year after Christ, and places it between Thera and Therasia. But it appears that, some time after, there arose another island called Thia, which disappeared, or was united to the "Sacred" island. Mention is made of it in Pliny (l. iv. c. 12.), in Theophanes, and in Brietius (vol. ii. p. 236.) Nothing remarkable happened afterwards till 1427, when a great explosion produced a rather great and very distinguishable increase to the island of Hiera, of which mention is made in some Latin verses engraved on a marble at Scauro, near the church of the Jesuits. In 1573 was formed, after a fresh explosion of some continuance, the "Little Kammeni," such as we see it at the present day. The island Hiera, called "Old Kammeni," to distinguish it from "New Kammeni" (see **KAMMENI**), is upwards of a mile in length, and appears to be nothing but a mass, without regular strata, of volcanic substances, and particularly of rocks of basalt. It is covered with a little earth, mixed with pumice-stones and volcanic ashes, which have given rise to the vegetation that has been there long established. This island is desert and uncultivated. In the summer only asses and mules are sent thither to graze. On the part, supposed to have been added to it at a later period, there is not as yet any trace of vegetation, and this part remains less elevated than the rest of the island. On Hiera are observed clefts somewhat considerable, which take the direction of its length, and extend almost from the one extremity to the other. These have, without doubt, been occasioned by the earthquakes which have very frequently occurred in these countries. Olivier's Travels in the Ottoman Empire.

HIERACHIOIDES, in *Botany*, a name given by Vailant to a genus of plants, since called by Linnæus *Crepis*; which see.

HIERACITES, **HIERACITÆ**, in *Ecclesiastical History*, a sect of ancient heretics, at the close of the third century, denominated, from their leader Hierax, a bookfeller of Leontium, and eminently distinguished by his extensive learning, and a venerable air and sanctity of virtue.

He absolutely denied the resurrection of the body, maintaining, that the soul alone rose again, and that the resurrection was altogether spiritual. Epiphanius surmises that he might have imbibed this error from Origen.

The same Hierax, and his followers, likewise condemned the use of flesh, wine, and marriage; being of opinion that they were only allowed under the Old Testament, and till the coming of Jesus Christ; but that under the new law they were prohibited, as incompatible with the kingdom of God.

St. Epiphanius produces the passages of scripture whereon he founded this doctrine. He adds, that Hierax did not adopt Origen's opinion with regard to the Trinity, but allowed the Son to be really and truly begotten of the Father. He was also orthodox with respect to the Holy Ghost, excepting for some peculiarities received from the Melchisedecians, on which he had refined, maintaining that Melchisedec was the Holy Ghost. He also excluded from the kingdom of heaven children, who died before they had arrived to the use of reason.

HIERACIUM.

reason. He lived a very austere life, and promoted the same among his followers; but, after his death, they degenerated very rapidly.

HIERACIUM, in *Botany*, from *ἰεράξ, a hawk*, because hawks were supposed to sharpen their sight by the application of its juice to their eyes. The absurdity of the idea proves the venerable antiquity of the name. Hawkweed.—Linn. Gen. 402. Schreb. 529. Willd. Sp. Pl. v. 3. 1559. Mart. Mill. Dict. v. 2. Sm. Fl. Brit. 827. Ait. Hort. Kew. v. 3. 121. Juss. 169. Tourn. t. 267. Lamarck. Illustr. t. 652. Gærtn. t. 158.—Class and order; *Syngenesia-Polygamia-aqualis*. Nat. Ord. *Compositæ semisiliculosa*, Linn. *Ciboraceæ*, Juss.

Gen. Ch. *Common Calyx* imbricated, ovate, of many linear, very unequal, longitudinal and incumbent scales. *Cor.* compound, imbricated, uniform; the florets hermaphrodite, numerous, equal, each of one petal, ligulate, linear, abrupt, with five teeth. *Stam.* Filaments five, capillary, very short; anthers united into a cylindrical tube. *Pist.* Germen nearly ovate; style thread-shaped, the length of the stamens; stigmas two, recurved. *Peric.* none, except the closed, ovate, permanent calyx. *Seeds* solitary, short, obtusely quadrangular; down capillary, sessile. *Recept.* nearly naked.

Eff. Ch. Receptacle nearly naked, dotted. Calyx imbricated, ovate. Down simple, sessile.

Obf. This genus is far more comprehensive in Tournefort than in Linnæus, embracing various species of *Crepis*, *Hypochaeris*, *Picris*, &c. The *Hieracia* of Vaillant have all branched stems; that author separating from them, by the name of *Pilosella*, such as have simple radical flower-stalks.

Thirty-five species are defined in the 14th edition of the *Systēma Vegetabilium*, 70 in Willdenow's *Species Plantarum*, though many of the former are now sent away, by the last-mentioned author, to his *Apargia* and other genera. Some indeed are removed by him into this genus from *Leontodon* and *Crepis*, but its chief increase is derived from new discoveries in the mountainous parts of Europe.

The whole are commodiously and naturally divided into three sections; 1st, stalks radical, single-flowered; 2dly, stalks radical, many-flowered; 3dly, stem leafy.

They are almost, without exception, perennial herbaceous plants, *H. glutinosum* only having an annual root, and *H. fruticosum*, Willden. n. 69, a shrubby stem. Their herbage is commonly hairy or rough, especially the calyx and top of the flower-stalks, which are in many instances clothed with dense, black, partly glandular, prominent, soft hairs. The leaves are simple, now and then spotted, usually entire in such species as are but little or not at all caulescent, more or less deeply toothed, or even pinnatifid, in the rest. Those placed on the stem are alternate, sessile, or frequently clasping that part by their arrow-shaped or heart-shaped base. The flowers are diurnal, of a full golden yellow, in a very few instances orange or lemon coloured, and in still fewer pink or purplish. Though the seed-down is properly described as simple, it is very generally rough, often verging towards a feathery structure.

Examples of the first section are,

H. alpinum. Linn. Sp. Pl. 1124. Fl. Lap. n. 283. Lightf. Scot. 434. t. 18. Engl. Bot. t. 1110. (*H. villosulum alpinum*, flore magno singulari, caule nudo; Dill. in Raii Syn. 169. t. 6. f. 2.) Leaves oblong, undivided, entire or notched. Stalk almost leafless, single-flowered. Calyx hairy.—Found on all the highest mountains of Europe, in rocky places, flowering in July. It is remarkable for its large solitary flower, whose calyx is black, clothed with long dense tawny hairs. The leaves vary much in the number and

depth of their marginal incisions—Willdenow quotes for this Jacquin's Fl. Austr. t. 191, which he had properly cited at the species immediately preceding as *H. alpestre* of that author, very distinct from the *alpinum*, in its downy more slender calyx, regularly toothed leaves, and taller stem.

H. Pilosella. Linn. Sp. Pl. 1125. Curt. Lond. fasc. 4. t. 54. Engl. Bot. t. 1093. Bulliard. Fr. t. 279. (*Pilosella repens*; Ger. em. 638.)—Leaves elliptical, entire, downy beneath. Scions creeping. Stalk single-flowered, leafless.—Very common throughout Europe in dry exposed places, on gravelly banks, sunny lawns, and the tops of park walls, where it blossoms from May to the end of July, expanding its bright sulphur-coloured flowers, elegantly striped at the back with crimson, to the meridian sun, "while the surrounding herbage, and even its own foliage, is withered and burnt up." The flowers close early in the afternoon. The leaves are beset with long rigid bristles, and singularly white beneath. The plant spreads widely by means of its long trailing leafy runners; on the Alps they are shorter, and the flowers larger. There is also an alpine variety, whose leaves are white on both sides.

Whether Willdenow has done right in referring the Linnæan *Leontodon bulbosum* hither, the only specimen we have of that rare plant will not enable us to decide, but every character in its outward appearance shews that it ought not to be generically separated from *L. tuberosum*, which he reckons an *Apargia*.

In the second section (stalks radical, many-flowered), are *H. dubium*. Linn. Sp. Pl. 1125. Fl. Brit. 828. Tr. of Linn. Soc. v. 9. 226. (*H. Auricula*; Fl. Dan. t. 1111. H. n. 53. Hall. Helvet. v. 1. 22. *Pilosella major prima*; Tabern. Kreuterb. 507.)—Leaves elliptic-lanceolate, nearly entire, hairy. Scions creeping. Stalk with several flowers. Native of rather moist mountainous pastures. Mr. Hudson and Mr. Woodward are both mentioned as having gathered it in the north of England, and we have from the Cambridge garden roots; said to be natives of Scotland. It differs from the last chiefly in having the leaves green on both sides, and the flowers two, three, or four, on each stalk, of a sulphur colour underneath as well as above. Some botanists have confounded the synonyms of the present with the following, on which subject copious illustrations may be seen in the Transactions of the Linnæan Soc. v. 9. 225.

H. Auricula. Linn. Sp. Pl. 1126. Fl. Brit. 829. (*H. dubium*; Fl. Dan. t. 1044. H. n. 52; Hall. Helvet. v. 1. 22.)—Leaves lanceolate, entire. Scions creeping. Stalk nearly leafless, many-flowered, umbellate.—On mountains in various parts of Europe, especially in the most lofty situations about the Glaciers of Switzerland. Mr. Hudson mentions gathering it on Dalehead, not far from Grassmere, Westmoreland, though sparingly. We never saw a British specimen. What is shewn for it in the botanic gardens is a mere variety of the last. The present has fewer runners, perfectly lanceolate leaves not dilated into a round or obovate shape, except one or two of the lowest, and smaller flowers, of a deeper, almost orange colour, with a far more hairy calyx.

H. aurantiacum. Linn. Sp. Pl. 1126. Jacq. Austr. t. 410. Don. Herb. Brit. fasc. 2. 41. Sm. Engl. Bot. t. 1469. (*H. hortense latifolium*, sine *Pilosella major*; Ger. em. 305.)—Leaves elliptical, entire. Stem nearly leafless, simple, hairy, bearing a corymbus of many flowers.—Found in mountainous woods in France, Italy, Switzerland, and Germany, but it was not known to be a native of Britain till Mr. G. Don discovered it in several woods in Banffshire, and at Craigston, near Turref, North Britain. In gardens it has long been known by the name of Grim the Collier,

Collier, and is distinguished by the rich orange hue of its *corolla*, contrasted with the black hairy *calyx*. It blooms in July, and forms large tufts if planted in shady places.

H. incarnatum. Jacq. Ic. Rar. t. 578.—Leaves obovate-oblong, wavy and toothed, hairy. Stalk many-flowered, somewhat corymbose, rough at the base, leafless. Calyx smooth.—Native of subalpine places in Carinthia and Carniola, very remarkable for its elegant pink *flowers* and deeper red anthers. The *leaves* are all radical, two or three inches long, light green, rough, with numerous short rigid hairs. Stalk about a foot high, slender, naked, bearing a sort of corymbose panicle.

H. Gmelini. Linn. Sp. Pl. 1127. (*H. foliis ex sinuato dentatis, caulibus supra ramolis subnudis, pedunculis hirsutis unifloris*; Gmel. Sib. v. 2. 23. t. 8. f. 2.)—Leaves lyrate-uncinate, smooth. Stalk leafless, corymbose.—Gathered in Siberia by Steller, and communicated by Gmelin to Linnæus. The most curious particular in the history of this plant is that a birch leaf, happening to stick to the bottom of the specimen, caused Linnæus to define it "with radical leaves ovate, serrated, and smooth." This strange error could not have been guessed without an inspection of his herbarium. "*Quandoque bonus dormitat Homerus.*"

In the third section (with leafy stems,) are,

H. paniculatum. Linn. Sp. Pl. 1127.—Stem erect. Leaves numerous, elliptic-lanceolate, toothed, naked. Panicle capillary, divaricated.—Found by Kalm in Canada. We have it also, from the Rev. Dr. Muhlenberg, gathered near Lancaster, in Pennsylvania. The stem is 12 or 18 inches high, terminating in a singularly delicate, smooth, wide-spreading panicle, of small yellow flowers, not half the size of our common *Lapsana*.

H. montanum. Jacq. Austr. t. 190. Willd. n. 36. (*H. n. 38*; Hall. Helvet. v. 1. 16. *H. latifolium montanum præaltum glabrum, endiviæ folio*; Boec. Mus. v. 1. 148. t. 113. *Hypochaeris pontana*, an error of the press for *montana*; Linn. Sp. Pl. 1140. *Andryala pontana*; Villars. Dauph. v. 3. 67. t. 23.)—Stem simple, leafy, single-flowered. Leaves sessile, obovate-lanceolate, with hooked teeth. This fine species grows on the alps of Austria, Savoy, Switzerland, and Dauphiny. The root is externally black, and runs deep into the ground. Stem from one to near three feet high, simple, solid, furrowed, roughish; leafy in the lower part; elongated and naked at the top, bearing one large handsome yellow flower, whose calyx is black, shaggy, and somewhat tawny. The leaves are about three inches long, acute, thin, veiny, smooth, edged with small, unequal, more or less hooked, teeth. Linnæus in his own copy of Sp. Pl. has corrected the error of the press, which led his transcribers astray, but which any of them might easily have detected by turning to Boccone; yet Willdenow copies the synonym of the latter, retaining the error in question, as well as another referring to vol. 2. instead of 1. We cannot too often insist on the editors of any of the works of Linnæus turning to, and correcting, quotations. This at least is in their power, and would be far more useful than many alterations, concerning which their judgment and experience may possibly be inferior to that of their author. In the latter part of this censure we aim not at our friend Willdenow, who, except some trifling or erroneous changes in specific characters, and his universally copying from the original edition, like his predecessors, remarks, that these apply to an immediately preceding species, without altering such reference, though he introduces ever so many new ones between the two, (witness his *Hieracium paludosum*, n. 44.) has proved himself in many respects a highly meritorious editor.

Several more species of this section are found on the continent, and many of them in Britain. The latter, as far as hitherto determined, are *H. murorum*, Engl. Bot. t. 2082; *maculatum*, t. 2121; *sylvaticum*, t. 2031; *Lacusei*, t. 2083, which we are rather inclined to place here on account of its affinity to the rest, though (like *murorum* indeed,) it has but one or two stem-leaves; *paludosum*, t. 1094; widely different from *murorum*, notwithstanding the suspicion of Linnæus; the stem is hollow; whole plant intensely bitter; *cerinthoides*, Linn. Sp. Pl. 1129, found in the Highlands, by Mr. G. Don; *molle*, Engl. Bot. t. 2210; *villosum*, Jacq. Aultr. t. 87; *sabaudum*, Engl. Bot. t. 349; *denticulatum*, t. 2122; *prenanthoides*, t. 2235; and *umbellatum*, t. 1771. We have imperfect specimens of several more, either varieties or species, from Scotland, but they require to be cultivated and observed in different states, before they can be finally settled, this being one of the most difficult of European genera, in which it vies with *Saxifraga* and *Potentilla*. S.

HIERACIUM, in Gardening, contains plants of the herbaceous hardy, flowering perennial sorts, of which the species most usually cultivated are, the orange-flowered hawkweed (*H. aurantiacum*); and the gum-fuccory hawkweed (*H. chondrioides*.) The former is frequently distinguished by the name of golden moufe-ear, and when of a dark colour by that of Grim the collier. And it varies in the colour of the flower from red to orange, as well as several shades of yellow.

Method of Culture.—These different species of plants are capable of being increased by means of sowing the well ripened seeds early in the spring upon a bed or border of fresh earth, which has an exposure towards the east. As soon as the plants have a few inches growth, they must be removed into other beds in order to stand until the autumn, when they should be planted out where they are to remain. A better practice is, however, that of at first setting them where they are intended to continue.

They are also capable of being multiplied by means of slips from the roots, which should be planted in the autumn or spring in the places where the plants are to remain. In each of these modes of increasing them, they should have pretty full supplies of water in dry seasons.

When planted in such soils as are neither too rich, nor too much filled with moisture, the roots will continue for a great number of years.

These plants give variety in the clumps, borders, and other parts of pleasure grounds, in which they should constantly be placed towards the fronts.

HIERACOME, in *Ancient Geography*, a town of Asia, in Syria, situated to the east of the gulf of Issicus, between two chains of mountains.

HIERACUM, a town of Upper Egypt, in the Thebaide, placed in Antonine's Itinerary between Iliu and Pella; 20 miles from the former and 28 from the latter.

HIERACURRA, in *Geography*, a town of Hindoostan, in Goleonda; 35 miles S.E. of Hydrabad.

HIERÆA, in *Ancient Geography*, a small country of Libya.

HIERAMÆ, a town of Asia, in Caria. Steph. Byz.

HIERA PICRA, in *Pharmacy*, originally a kind of electuary, first described by Galen, composed of aloes, cinnamon, asarabacca, spica nardi, saffron, and maltic, made up with honey, or syrup of violets and honey.

It is denominated from the Geek *ιερος*, sacer, holy, because of its rare virtues; and *αμαρος*, amarus, bitter; aloes, which is the base thereof, rendering it extremely bitter.

It was used to purge and cleanse the stomach, remove obstructions,

obstructions, promote the menses and hæmorrhoids, and sweeten the blood; but its chief use among us is in powder, for making the *tinctura sacra*.

Besides this *simple* *hiera picra*, there is a *compound* fort, called *diacolocynthidos Pachii*, because colocynthis is the base thereof; and it was first used, with good success, by Pachius of Antioch, in divers obstinate diseases. It is composed of colocynth, opopanax, ariltochia rotunda, agaric, and other ingredients. It is used in epilepsies, apoplexies, palsies, and lethargies; and to excite the menses, and promote the expulsion of the after-birth.

There is also a third sort of *hiera*, called *librans*; but rarely used. Dr. Quincy says, it is one of the most ridiculous medleys ever contrived. It passes for a cordial, &c.

HIERA PICRA, *Tincture of*. See *TINCTURA SACRA*.

HIERAPOLIS, or **HIEROPOLIS**, in *Ancient Geography*, a town of Phœnicia, in the Cyrrhæic territory. Ptolemy. —Also, a town of Asia, in Phrygia. Ptol. Steph. Byz. places it between Phrygia and Lydia, and says, that it had hot baths and several temples.—Also, a town of the island of Crete, which was episcopal.—Also, a town of Caria.—Also, an episcopal town of Arabia, under the metropolis of Babba, in the Moabitide territory.—Also, another episcopal town of Arabia, under the metropolis of Boitra.—Also, a town of Asia, in Syria, called “Bambyce” and now “Mambedj,” S. S. W. of Zeugma, at an equal distance from a chain of mountains and the Euphrates, or two days’ journey N. E. of Aleppo. The worship of the great Syrian goddess, called “Atergatis,” was established in this town; but no traces now remain of her temple. The only remarkable monument is a subterranean canal, which conducts the water from the mountains of the N. for the distance of four leagues. The name of Hierapolis still subsists in that of another village, called “Yerabolos,” situated on the Euphrates.

HIERAPUMNAL, in *Geography*, a town of Meckley; 60 miles S. of Munnipour.

HIERAPYTNA, in *Ancient Geography*, a town of Crete, called also “Cyrria,” “Pytna,” and “Camyros,” and supposed to be the same place which Ptolemy calls “Hiera Petra,” or the Sacred Rock. The ruins of this city are still visible on the coast over-against the rocks called by the ancients the “Isles of Asses.” Hierapytna was one of the strongest places on the island, when Metellus undertook the conquest of Crete; but it is at present only a village known by the name of “Girapietra.”

HIERARCHY, **HIERARCHIA**, in *Theology*, the order or subordination among the several choirs or ranks of angels. The word is Greek *ἱεραρχία*, formed of *ἱερός*, *sacer*, *holy*, and *ἀρχή*, *principatus*, *rule*; *q. d.* *ἱεραρχία*, *holy command*, or *rule in holy things*.

St. Dionysius, and other of the ancient writers, establish nine choirs or orders of celestial spirits; *viz.* seraphim, cherubim, thrones, dominions, principalities, powers, virtues, angels, and archangels: and these they divide into three hierarchies.

HIERARCHY is also used for the subordination between prelates and other ecclesiastics. See **PRIEST**, &c.

Archbishops, bishops, priests and deacons, compose the hierarchy of the church of England. In that of Rome, the pope has likewise a place at the head of the hierarchy.

F. Cellot, a Jesuit of Paris, has published a volume expresses (*De Hierarchia & Hierarchis*) on the hierarchy, and those who compose it. He there distinguishes a created and an uncreated hierarchy; a divine and a human, or ecclesi-

astical hierarchy; and in this, a hierarchy of jurisdiction, a hierarchy of an order, and a hierarchy of graces, the most sublime of all.

He defines hierarchy, in the general, a command or sovereignty in holy things; “*principatus*, *five imperium*, in *rebus sacris*,” on which footing he holds, that hierarchy excludes all below bishops; and that neither priests nor deacons can be reckoned among the number of hierarchists. Bellarmin, Hallier, Aurelius, &c. he holds, were all mistaken, and did not distinguish between being *of* the hierarchy, and being *under* it.

HIERASSON, in *Ancient Geography*, an episcopal town of Arabia, under the metropolis of Beryra.

HIERATIC PAPER, among the *Ancients*, was the finest sort of paper, which was set apart only for sacred or religious uses. See **PAPER**.

HIERATIN, in *Ancient Geography*, a town situated on the coast of the gulf of Persia, at the mouth of a river named Heratemis.

HIERES, in *Geography*, a town of France, in the department of the Var, and chief place of a canton, in the district of Toulon; nine miles E. of Toulon. This town was formerly a sea-port, where pilgrims bound for the holy land were accustomed to embark; but it is now at a considerable distance from the sea; situated on the side of a hill, in a delightful country, where is a perpetual spring, and surrounded by beautiful gardens, affording the best fruit in France; oranges, citrons, and pomegranates grow in the open air. Near the town are large salt-works, in which the salt is made partly from sea-water and partly from a salt-lake near the town. The noxious effects of the exhalations from the salt-lake have been remedied by a canal cut from the lake to the sea. The gulf of Hières, between the town and the island so called, is a famous road for vessels, with good anchoring ground and sufficient depth of water. The place contains 6528, and the canton 6528 inhabitants, on a territory of 205 kilometres in one commune. N. lat. 43° 7'. E. long. 6° 12'.

HIERES ISLANDS, a cluster of small islands in the Mediterranean, near the coast of France, which take their name from the town of Hières. They are famous for a great variety of medicinal plants. N. lat. 43° 2'. E. long. 6° 10'.

HIERISOS, a town of European Turkey, in Macedonia, near the coast; 50 miles S. E. of Saloniki.

HIERKEN, a town of Norway, in the diocese of Drontheim; 40 miles S. E. of Romsdal.

HIERO, in *Biography*, king of Syracuse, succeeded his brother Gelon in the year B. C. 478. Being of a jealous and tyrannical disposition, his brother, who fell under his suspicions, fled to the court of Theron, king of Agrigentum. A war between the two monarchs was the consequence, which continued with various success several years, till it was ended by a treaty advantageous to Hiero, who married the sister of Theron, and then admitted his brother to favour. After a reign of no great length this prince fell into a lingering malady, the pains of which he endeavoured to divert by the conversation of poets and philosophers, whom he had drawn to his court by liberal encouragement. He died about the year 467 B. C. Pindar addressed four of his odes to Hiero, who was a successful competitor in the Olympic and Pythian games. Simonides was induced in his old age, to comply with an invitation of this prince; and it was his question “What is God?” which produced the philosopher’s celebrated request of time repeatedly doubled, for answering a query which seemed more difficult the more it was considered. Æschylus, and other great men

and poets, are mentioned as ornaments of his literary and social circles. Univer. Hist. Bayle.

HIERO II. king of Syracuse, was son of Hierocles, a descendant of Gelon. His mother was a female slave, and the father was so ashamed of his offspring, that he is said to have ordered him to be exposed in the woods, where he was casually nourished with wild honey. His escape from the fangs of death was regarded as little short of a miracle, and he was on that account brought home and very carefully educated. He soon became distinguished among his companions, as well by his dexterity in all manly exercises, as by his readiness in receiving instruction. As a warrior he served in his youth under Pyrrhus king of Epirus, and at the age of twenty-five he was regarded as one of the ablest commanders of his army. On the departure of Pyrrhus from Sicily, Syracuse became a prey to the factious. Hiero, at the head of his men, entered the city with his colleague, and assumed the reins of government. To strengthen his interest among the people he married the daughter of Leptines, a person of great authority, and committed the domestic management to his father-in-law, while he was absent in the field. There were at this time large bodies of mercenaries in pay, whose insolent and mutinous spirit was the source of constant disturbances. Hiero freed himself from these by a stratagem which was more successful than honourable. Leading the whole army against the Mamertines, a ferocious body of adventurers who had seized upon Messana, he formed two separate divisions of the mercenaries and Syracusans, and ordered the former to attack the enemy, pretending that he meant to support them with the latter. They entered on the contest with the utmost degree of valour, and were in the end almost entirely cut to pieces. When Hiero saw that he had nothing now to fear from his allies, he supplied their places with the Syracusan military, who without difficulty gave the Mamertines a signal defeat, and made himself master of the surrounding country. On account of this success he was unanimously raised to the throne of Syracuse about the year 265 B. C. In a short time he offered terms of peace and alliance with the Romans, which were readily accepted; and he ever after continued the steadiest of all the foreign friends of the republic, and as a reward of his constancy he enjoyed a long and prosperous reign of almost uninterrupted tranquillity. His mild and equitable rule extinguished party animosities among his people, while his attention to the interests of agriculture enabled him to patronize all the arts by which a nation is made flourishing. He undertook, and with the aid of Archimedes accomplished, some public works of great magnificence. He encouraged commerce, and fitted out numerous fleets of trading vessels to convey the superfluous harvests of Sicily to other countries, and, it is said, that the commercial spirit of Hiero was fully allied to the liberality of princely opulence. He relieved the Rhodians, after a most disastrous earthquake, with a hundred talents in money, and many other valuable donations. After the fatal battle of Thrasymenus, in the second Punic war, he sent a fleet laden with provisions to the port of Ostia, and directed his ambassadors, after condolences expressed in the most pathetic terms, to offer to the republic these and whatever other supplies it might stand in need of; and also for the sake of the Augury to accept of a statue of Victory of pure gold, weighing three hundred pounds. The senate was highly gratified with this mark of attachment at such a period, and decreed that the Victory should be placed in the temple of the Capitoline Jupiter. Hiero, notwithstanding his zeal for the cause of the republic, was mortified by the conduct of his son Gelon, who openly declared for the Carthaginians, and by his influence would probably have obliged

his aged father to a passive acquiescence in his measures, had he not been carried off by a sudden illness. Hiero died about the year 215 B. C., in the 90th year of his age, and the 54th of his reign. He was universally regretted, and all the inhabitants of Sicily showed by their lamentations, that they had lost a common father and an affectionate friend. He was a liberal patron of literature, and wrote a book on agriculture.

HIERO. See FERRO.

HIERO'S Crown, in *Hydrostatics*. The history of this crown and of the important hydrostatical proposition, to the discovery of which it gave occasion, is as follows: Hiero, king of Syracuse, having furnished a workman with a quantity of gold for making a crown, suspected that he had been cheated, and that the workman had used a greater alloy of silver than was necessary in the manufacture of it; he, therefore, applied to Archimedes for a discovery of the fraud. This celebrated mathematician was led by chance to a method of detecting the imposture, and of determining precisely the quantities of gold and silver of which the crown was composed; for he observed, whilst he was bathing in a tub of cold water, that as he immersed his body in it, the water ran out; and he immediately concluded, that the water which ran out, when his whole body was immersed, was equal in bulk to his body. It is said, that he was so pleased with the discovery, as to run about naked crying out, *εὕρηκα, εὕρηκα, I have found it*; and others affirm, that he offered a hecatomb to Jupiter for having inspired him with the thought.

On this principle he procured a ball of gold and another of silver, exactly of the weight of the crown, considering, that if the crown were altogether of gold, the ball of gold would be of the same bulk as the crown, and when immersed in water, would raise the water just as high as the crown immersed; but if it were wholly of silver, the ball of silver, being immersed, would raise the water no higher than the crown immersed; and if the crown was of gold and silver mixed in a certain proportion, this proportion would be discovered by the height to which the crown would raise the water higher than the gold and lower than the silver. Accordingly, let A M L B (*Plate VIII. Hydrostatics, fig. 3.*) be a vessel filled with water to the height D C, and let the mass of gold, equal in weight to the crown, on being immersed into the water raise the surface of it to E, and the mass of silver raise it to G; then if the height of the vessel above D C be divided into equal parts, and D F = 11, and D G = 19, it is plain the bulks of gold and silver will be as D F to D G, and the specific gravities in the inverse proportion of these quantities, or as D G to D F. If the crown be immersed, it will raise the surface of water to E; whence the proportion of the bulks of the gold and silver in the crown may be determined. For since the difference of the specific gravities of the gold and silver is D G = D F = F G = 8, if the bulk of the crown is divided into eight equal parts, it is evident, that since the specific gravities of the debased and pure gold crowns will be as the bulks inversely, that is, as D F to D E, we can easily find the point H, which will express the specific gravities of the former; for D E : D F :: D G : D H. This point H always divides the difference F G into two parts G H, H E, which have the same proportion as the parts of silver in the crown to the parts of gold; for as the point E ascends, the point H descends, and when E coincides with G, H falls upon E, and the crown becomes wholly silver; on the contrary, when E descends to F, and H ascends to G, the crown becomes wholly gold; therefore, F H will be every where to H G as the parts of gold to the parts of silver.

silver in the crown. Consequently, in the present case, because the crown, when immersed, raises the water to the height D E, and H is three divisions below G, it shews that three of the eight parts of the crown are silver, and the other five parts gold, as H is five of the divisions above F. Hence, the bulk of the gold in the crown is to that of the silver as 5 to 3. In some such method as this Archimedes deduced his proposition, *viz.* that the difference of the specific gravities of the compound and lighter ingredient, *i. e.* 5, (supposing the specific gravity of gold to silver as 19 to 11, and the specific gravity of the king's crown to be 16,) is to the difference of the specific gravities of the heavier ingredient and the compound, *i. e.* 3, as the bulk of gold to that of silver made use of: so that if the whole crown were divided into eight parts, the gold would consist of five, and the silver of three; and the magnitudes 5 and 3, multiplied by the specific gravities 19 and 11 respectively, will give the numbers 95 and 33, expressing the proportion of the weight of the gold to that of the silver.

This proposition of Archimedes may be demonstrated analytically in the following manner: let the magnitudes of the gold and silver in the crown be A and B, and their specific gravities as *a* and *b*; then since the absolute gravity of any body is compounded of its magnitude and specific gravity, the weight of the gold is *a* A, of the silver *b* B, and of the crown *a* A + *b* B = *c* × $\sqrt{A + B}$, supposing *c* to be the specific gravity of the mixture. Hence *a* A - *c* A = *c* B - *b* B; and consequently, *c* - *b* : *a* - *c* :: A : B, as before. Cotes's Hydrostatical, &c. Lectures, p. 81. Martin's Phil. Brit. vol. i. p. 305, &c. See SPECIFIC GRAVITY and EQUATION.

HIEROBOTANE, in *Botany*. See VERVAIN.

HIEROBULUM, a name given by the ancients to the colchicum.

Some have wondered that the medical writers of those times should give this name, which signifies the *sacred root*, to a thing that was generally allowed to be a poison; but Wedelius has proved that it may be given, under proper regulations, with safety and great success, in malignant and petechial fevers, and in the worst kinds of the small-pox and measles. The manner he gave it was in a mixture with bezoar and plantane-root, and this he called his *arcanum duplicatum catholicum*, or pestilential alexipharmic. The ancients had a custom of wearing this root about their necks, by way of an amulet, to prevent infection; and it was probably from this that it obtained the name of the sacred bulb.

HIEROCERYCE, in *Mythology*, the chief of the sacred heralds in the mysteries of Ceres, whose office was to exclude all improper persons, to preserve order in the celebration of these mysteries, and to recite the formulæ of initiation.

The hieroceryce represented Mercury, and was distinguished by the same attributes; the office was perpetual, and belonged to the family of the Ceryces, the descendants of Ceryx, the last son of Eumolpus.

HIEROCHLOE, in *Botany*, from *ἱερός*, *sacred*, and *χλωή*, *a green herb or grass*, so named by Gmelin, because this grass has a similar appellation in Prussia, and is there strewed before the church-doors on festival days, being considered as sacred to the Virgin Mary. Loefel calls it *Gramen Maris*. Its scent, when it begins to dry, is that of Woodruff, or the most fragrant new hay.—Gmel. Sib. v. 1. 101. Brown. Prodr. Nov. Holl. v. 1. 208. (Difarrhenum; Billard. Nov. Holl. v. 2. 82. See DISARRHENUM.)—Class and order, *Triandria Digynia*. Nat. Ord. *Gramina*.

Gen. Ch. *Cal.* Glume of two valves, containing three florets; its valves ovate, acute, membranous, unequal. *Cor.* of two valves; the outer ovate, coriaceous, ribbed, often rough, sometimes shortly awned; the inner smaller, membranous, naked, emarginate, with inflexed edges. *Stam.* Filaments three in each of the lateral florets, capillary, recurved, shorter than the corolla, two in the central or terminal one; anthers pendulous, linear, forked at each end. *Pist.* in the central floret only; Germen superior, ovate, small; styles short, approximated; stigmas longer than the corolla, linear, downy. *Peric.* none, except the permanent corolla. *Seed* solitary, ovate, pointed, small, not attached to the corolla.

Eff. Ch. Calyx of two valves, containing three florets; the lateral ones male, with three stamens; central one hermaphrodite, with two. Corolla of two valves.

A genus of smooth grasses, which in drying acquire the sweet scent of Woodruff, or new hay, approaching to the bitter-almond flavour. The flowers are panicked; their central floret mostly without awns, the lateral ones often awned. It contains many species, according to Mr. Brown, natives of the colder parts of both hemispheres.—Examples of *Hierochloe* are

H. antarctica. Brown 209. (Difarrhenum antarcticum; Billard. Nov. Holl. v. 2. 83. t. 232.)—Panicle loose, somewhat drooping. Glumes single-ribbed, with an even keel. Lateral florets awned, downy, fringed at the margin and keel with curved hairs; central one pointed. Leaves flat.—Native of Van Diemen's Land.—Mr. Brown remarks, that *Holcus redolens*, Fort. Prodr. 92. n. 563, taken by that author from Solander's manuscripts, appears by the Banksian herbarium to be very nearly related to the above, differing only in having the inner glume of the calyx furnished with three ribs at the base, and the hairs which fringe the edges and keel of the lateral florets longer and straighter. This was found in New Zealand, and we presume it may safely be deemed a variety only. *Aira antarctica*, Forst. Prodr. 8. n. 41, suspected by La Billardièrre to be his *Difarrhenum antarcticum*, is found by Mr. Brown, on examining an authentic specimen, to be very different, and to belong to the genus *Avena*.

H. redolens. (Holcus redolens; Vahl. Symb. fasc. 2. 102.) Panicle close. Keels of the glumes beset with little scattered teeth. Florets bearded at the base; fringed at the margin and summit. Leaves involute.—Native of Terra del Fuego. Rather larger than the foregoing, with awns as long as the corolla, whose edges are strongly fringed, and its extremity abrupt. The colour of the corolla is a rich brown; that of the calyx paler but not quite white.

Other species are the *Holcus borealis* and *australis* of Schrader's Fl. Germ. v. 1. 252, 253, included by Linnæus in his *H. odoratus*, Sp. Pl. 14. 5; and *H. alpinus*, sent us by Dr. Swartz as described by himself in Schrader's Journal, but we have not been able to discover it in the volumes we possess. This last has a small, dense, ovate, copper-coloured panicle, awns nearly equal to the corolla, and involute leaves. Not having access to the whole of the species of which we have incomplete information, we cannot safely attempt to define even those that we know, because we cannot contrast the whole together.

HIEROCLES, in *Biography*, governor of Bithynia and præfect of Alexandria, flourished about the year 303, and distinguished himself as an adversary and persecutor of the Christians. He was a man of letters, and wrote "Two Books," addressed "To the Christians," of which Lactantius has given an account (Inst. l. v.), and which have been answered by Eusebius of Cæsarea. (Cont. Hier. ad Calc. em.

Evangel.) In these books Hierocles endeavoured to shew, that the sacred scriptures abound with inconsistencies and contradictions. He also reviled Peter and Paul, and the other disciples, as men ignorant and illiterate, some of whom got their livelihood by fishing, and propagators of falsehood. He also affirms, that Christ was banished by the Jews, and afterwards assembled a band of 900 men and committed robbery. We are also informed, that Hierocles made a comparison of Christ with Apollonius of Tyana, giving the preference to the latter. From the account of the work of Hierocles, which is given by Lactantius and Eusebius, Dr. Lardner deduces the following conclusions: that Hierocles had read the scriptures of the New Testament, if not of the Old likewise; that he bears testimony to the existence of the several parts of the New Testament, the Gospels, and the Epistles; that he did not dispute the genuineness or antiquity of the writings of our apostles and evangelists, but merely endeavoured to disparage them; that he did not deny the truth of our Saviour's miracles, but endeavoured to depreciate them by ascribing them to magical arts; that the respect shewn to Jesus by vast numbers of men, though he was defamed by many, and though he was crucified, is a demonstration, that he was not a man of a bad character, for robbers and other malefactors, who suffer for their crimes, are never deified nor much respected after their death; it appears also, that Hierocles was the first who had formed a comparison of our Saviour with Apollonius. Lardner's Works, vol. viii.

HIEROCLES, a Platonic philosopher of Alexandria, flourished about A. D. 450. He was cruelly scourged at Constantinople for his adherence to the Pagan superstitions; and it is said that, in the midst of his torture, when he received some of the blood into his own hand, he threw it upon the face of his judge, repeating the following verse from Homer (Odyss. l. ix. v. 347.):

Κυκλωψ, τῆς, πῆς, πῆς, ὄνοι, ἐπὶ ζῶγες ἀνδρῶν κρεα.

“Cyclops! since human flesh has been thy feast,
Now drain this goblet, potent to digest.”—Pope.

It appears, however, that notwithstanding this unjust treatment by the Christians at Constantinople, he afterwards philosophized at Alexandria in his usual manner; and hence we may infer, that the severities with which the Gentile people, and particularly their learned men and philosophers, were treated, were not extremely rigorous. Hierocles wrote a treatise “On Providence,” of which Photius has given large extracts, and in which he appears to be an advocate for the Eclectic philosophy, labouring to reconcile the doctrines of Plato and Aristotle concerning providence, the origin of the world, the immortality of the soul, and other subjects. He pursues the same method of philosophizing in his book “On Fate,” and in his “Commentary on the Golden Verses of Pythagoras,” which is still extant. Besides these, there are large fragments of other works preserved in Stobæus, and generally published together with the works above-mentioned. All these are valuable, tending to recommend and promote virtue; but not with that force which flows from revelation, enjoining every part of moral righteousness by divine authority, and with the assurance of recompences in a future state. Lardner's Works, vol. ix. Brucker's Hist. Phil. by Enfield, vol. ii.

HIEROCORACES, *q. d. sacred crocus*, in *Mythology*, were ministers of Mithras, or of the Sun, which the Persians worshipped under this title.

HIEROGLYPHIC, Ἱερογλυφικα, a symbol or mystic

figure, used among the ancient Egyptians to cover or conceal the secrets of their theology.

The word is composed of the Greek ἱερός, *sacer, holy*, and γλυφίζω, *sculptere, to engrave*; it being the custom to have the walls, doors, &c. of their temples, obelisks, &c. engraven with such figures.

HIEROGLYPHICS are properly emblems or signs of divine, sacred, or supernatural things; by which they are distinguished from common symbols, which are signs of sensible and natural things.

Hermes Trismegistus is commonly esteemed the inventor of hieroglyphics; he first introduced them into the Heathen theology; from whence they have been transplanted into the Jewish and Christian. See **HERMES**.

Sacred things, says Hippocrates, should only be communicated to sacred persons. Hence it was, that the ancient Egyptians communicated to none but their kings and priests, and those who were to succeed to the priesthood and the crown, the secrets of nature, and the secrets of their morality and history; and this they did by a kind of cabbala, which, at the same time that it instructed them, only amused the rest of the people. Hence the use of hieroglyphics, or mystic figures, to veil their morality, politics, &c. from profane eyes. (Spon.) This author, it may be observed, and many others, do not keep to the precise character of a hieroglyphic, but apply it to profane as well as divine things.

Hieroglyphics are a kind of real characters, which do not only denote, but in some measure express the things. Thus, according to Clemens Alexandrinus, Strom. v. a lion is the hieroglyphic of strength and fortitude; a bullock, of agriculture; a horse, of liberty; a sphinx, of subtilty, &c.

Such is the opinion that has generally been embraced both by ancient and modern writers, of the origin and use of hieroglyphics; it has been almost uniformly maintained that they were invented by the Egyptian priests, in order to conceal their wisdom from the knowledge of the vulgar. But the late bishop Warburton hath, with much ingenuity and learning, endeavoured to shew, that this account is erroneous.

According to this writer, the first kind of hieroglyphics were mere pictures; because the most natural way of communicating our conceptions by marks or figures was by tracing out the images of things; and this is actually verified in the case of the Mexicans, whose only method of writing their laws and history was by this picture-writing. But the hieroglyphics invented by the Egyptians, were an improvement on this rude and inconvenient essay towards writing; for they contrived to make them both pictures and characters; in order to effect this improvement, they were obliged to proceed gradually, by first making the principal circumstance of the subject stand for the whole, as in the hieroglyphics of Horapollon, which represent a battle of two armies in array by two hands, one holding a shield, and the other a bow; then putting the instrument of the thing, whether real, or metaphorical, for the thing itself, as an eye and sceptre to represent a monarch, a ship and pilot the governor of the universe, &c. and finally, by making one thing stand for or represent another, where their observations of nature or traditional superstitions led them to discover or imagine any resemblance; thus, the universe was designed by a serpent in a circle, whose variegated spots denoted the stars; and a man who had nobly surmounted his misfortune was represented by the skin of the hyæna, because this was supposed to furnish an invulnerable defence in battle.

The Chinese writing, he observes, was the next kind of improvement

improvement in the use of hieroglyphics; the Egyptians joined characteristic marks to images, the Chinese threw out the images, and retained only the contracted marks, and from these marks proceeded letters. The general concurrence of different people in this method of recording their thoughts, can never be supposed to be the effect of imitation, sinister views, or chance; but must be considered as the uniform voice of nature, speaking to the rude conceptions of mankind; for not only the Chinese of the East, the Mexicans of the West, and the Egyptians of the South, but the Scythians, likewise, of the North, and the intermediate inhabitants of the earth, viz. the Indians, Phœnicians, Ethiopians, &c. used the same way of writing by picture and hieroglyphic.

The bishop farther shews, that the several species of hieroglyphic writing took their rise from nature and necessity, and not from choice and artifice, by tracing at large the origin and progress of the art of speech. He proceeds to shew how, in process of time, the Egyptian hieroglyphics came to be employed for the vehicle of mystery. They used their hieroglyphics two ways; the one more simple, by putting the part for the whole, which was the *curiologic* hieroglyphic; and the other more artificial, by putting one thing, of resembling qualities, for another, called the *tropical* hieroglyphic; thus the moon was sometimes represented by a half circle, and sometimes by a cynocephalus. They employed their proper hieroglyphics to record openly and plainly, their laws, policies, public morals, and history, and all kinds of civil matters; this is evident from their obelisks, which were full of hieroglyphic characters designed to record singular events, memorable actions, and new inventions; and also from the celebrated inscription of the temple of Minerva at Sais, where an infant, an old man, a hawk, a fish, and a river-horse, expressed this moral sentence; All you who come into the world and go out of it know this, that the gods hate impudence. However, the tropical hieroglyphics, which were employed to divulge, gradually produced symbols which were designed to secrete or conceal; thus Egypt was sometimes expressed by the crocodile, sometimes by a burning censor with a heart upon it; where the simplicity of the first representation and the abstruseness of the latter shew, that the one was a tropical hieroglyphic for communication, and the other a tropical symbol invented for secrecy.

Enigmatic symbols were afterwards formed by the assemblage of different things, or of their properties that were less known; and though they might have been intelligible at first, yet, when the art of writing was invented, hieroglyphics were more generally disused, the people forgot the signification of them, and the priests, retaining and cultivating the knowledge of them, because they were the repositories of their learning and history, at length applied them to the purpose of preserving the secrets of their religion.

Symbols were the true original of animal worship in Egypt, as sir John Marsham conjectured, Can. Cron. p. 58. because in these hieroglyphics was recorded the history of their greater deities, their kings, and lawgivers; represented by animals and other creatures; the symbol of each god was well known and familiar to his worshippers, by means of the popular paintings and engravings on their temples, and other sacred monuments; so that the symbol presenting the idea of the god, and that idea exciting sentiments of religion, it was natural for them in their addresses to any particular god, to turn to his representative mark or symbol; especially when we consider farther, that the Egyptian priests feigned a divine original for hieroglyphic characters, in order to increase the veneration of the people for them.

These would of course bring on a relative devotion to these symbolic figures, which, when it came to be paid to the living animal, would soon terminate in an ultimate worship.

Another consequence of the sacredness of the hieroglyphic characters was, that it disposed the more superstitious to engrave them on gems, and wear them as amulets or charms. This magical abuse seems not to have been much earlier than the established worship of the god Serapis, which happened under the Ptolemy, and was first brought to the general knowledge of the world by certain Christian heretics and natives of Egypt, who had mixed a number of Pagan superstitions with their Christianity. These gems, called abraxas, are frequently to be met with in the cabinets of the curious, and are engraven with all kinds of hieroglyphic characters. To these abraxas succeed the talismans. Warburton's Divine Legation of Moses demonstrated, vol. ii. passim.

HIEROGRAMMATEI, ἱερογραμματεῖς, among the *Ancient Egyptians*, were the priests appointed to explain mysteries of religion, and to direct the performance of the ceremonies thereof; and for this purpose they had a kind of sacred alphabetical character, different from the political one, and which the writer, cited in the last article, considers as one of the four kinds of Egyptian writing. This, as well as the epistolic, used in civil matters, was formed by the letters of an alphabet; and, from its being used only in religious matters, was called hierogrammatic. The other two species of writing were the hieroglyphic and symbolic.

The hierogrammatei invented and wrote hieroglyphics and hieroglyphical books, and occasionally explained them, together with other matters relating to the doctrines of religion. If we may believe Suidas, they were all prophets; at least, he relates, that a hierogrammateus foretold to an ancient king of Egypt, that there would be an Israelite of great wisdom, virtue, and renown, who should humble Egypt.

The hierogrammatei were always near the king, to assist him with their informations and councils: the better to fit them for this, they made use of the skill and knowledge they had acquired in the stars and the motions of the heavenly lights, and even of the writings of their predecessors, wherein their functions and duties were delivered. They were exempted from all civil employments, were reputed the first persons in dignity next the king, and bore a kind of sceptre in form of a plough-share.

After Egypt became a province of the Roman empire, the hierogrammatei sunk into neglect.

HIEROLOGY, denotes a discourse on sacred things. Among the Jews and Greeks, this term was used for the nuptial benediction.

HIEROMANTIA, ἱερομαντεία, in *Antiquity*, a general name for all kinds of divination, made from the various things offered in sacrifice to the gods. They first made conjectures from the external parts and motions of the victim; then from its entrails, from the flame in which it was consumed, from the cakes and flour, from the wine and water, &c. Vide Pott. Archæol. Græc. lib. ii. cap. 14. tom. i. p. 314.

HIEROMENIA, ἱερομενία, in *Ancient Chronology*, a name given to the month in which the Nemean games were celebrated. It was the same with the Athenian month Bœdromion, and answered to the latter end of our August and beginning of September.

HIEROMNEMON, ἱερομνηστής, among the *Ancient Greeks*, signified a delegate chosen by lot, and sent to the great council of the Amphictyons, where he was to take care of what concerned religion. The hieromnemes were reckoned more honourable than the other members of that assembly, the

the general meetings of which were always summoned by them, and their names were prefixed to the decrees made by that council.

HIEROMNEMON, composed of *ἱερός*, *sacred*, and *μνηστής*, *one who advertises or puts in mind of*, an officer in the ancient Greek church, whose principal function was to stand behind the patriarch at the sacraments, ceremonies, &c. and shew him the prayers, psalms, &c. which he was to rehearse.

He also clothed the patriarch in his pontifical robes, and assigned the places of all those who had a right to be around him when seated on his throne, as the master of the ceremonies now does to the pope.

The hieromnemon was commonly a deacon: when he was in priest's orders, as it sometimes happened, he was excused from dressing the patriarch in his pontifical habits. Whether he were deacon or priest, he had always under him an officer named *castricius*. He had also the keeping of the book entitled "Contacion," or book of ordination; and that called the Enthronianismus, which was a sort of ritual.

HIEROMNEMON, in the *Writings of the Ancients*, was also the name of a stone said to have been used in divination, and called by others *crotylos* and *amphicome*. There is no description left us of it by the ancients, from which we may guess what stone it was, or from whence it was brought.

HIERONESOS, in *Ancient Geography*, an island of the Mediterranean, between Sicily and Africa. Pliny.

HIERONYMITES, compounded of *ἱερός*, *holy*, and *εἰρημια*, *name, or Hermits of St. Jerom*. See **JERONYMITES**.

HIEROPHANTES, or **HIEROPHANTA**, from *ἱερός*, *holy*, and *φαίνω*, *I appear*, in *Antiquity*, a priest among the Athenians.

The hierophantes was properly the chief person that officiated in the Eleusinia, that great solemnity sacred to Ceres.

This office was first executed by Eumolpus, and continued in his family for twelve hundred years, though, when any person was appointed to this dignity, he was required always to live in celibacy.

St. Jerom says, that the hierophantes extinguished the fire of lust, by drinking *cicuta*, or the juice of hemlock, or even by making themselves eunuchs. Apollodorus observes, that the hierophantes instructed persons initiated into their religion in the mysteries and duties thereof, and that it was hence he derived his name: for the same reason he was called *prophetes*, the prophet. He had officers under him to do the same thing, or to assist him therein, who were also called *prophetes* and *exegetas*, i. e. *explainers of divine things*.

To the hierophantes it belonged to dress and adorn the statues of the gods, and to bear them in processions and solemn ceremonies.

There were also women employed in the ceremonies of the Eleusinia, and named Hierophantida.

HIEROPHYLAX, of *ἱερός*, *sacred*, and *φυλάξ*, *keeper*, of *φυλάξις*, *I keep*, an officer in the Greek church. His function is that of guardian or keeper of the holy things, utensils, vestments, &c. answering to our *sacrista* or *sexton*.

HIEROSCOPY, **HIEROSCOPIA**, formed of *ἱερός*, *sacred*, and *σκοπέω*, *I view or consider*, a kind of divination performed by considering the victim, and observing every thing that occurs during the course of the sacrifice.

HIERSAC, in *Geography*, a town of France, in the department of the Charente, and chief place of a canton, in the district of Angoulême. The place contains 593, and the canton 11,113 inhabitants, on a territory of 205 kilometres, in 14 communes.

HIERTING, or **LETING**, a sea-port of Denmark, situated at the mouth of the Warde, with one of the best

harbours in N. Jutland; 22 miles N.W. of Ripen. N. lat. 55° 29'. E. long. 8° 22'.

HIERTLANDA, a town of Sweden, in the province of Smaland; 30 miles N. of Wexio.

HIETANIEMI, a town of Sweden, in West Bothnia; 24 miles N. of Tornea.

HIGANQUET, a town on the E. coast of the island of Mindanao. N. lat. 9° 26'. E. long. 125° 51'.

HIGDEN, **RALPH**, in *Biography*, one of the English chroniclers, was a monk of St. Werburg's, in Chester, where he died in the year 1377. His historical work was entitled "Polychronicon," originally written in Latin, but translated into English by John de Trevisa, and printed by Caxton. It is in seven books, and extends from the creation to the year 1357. This author is valuable as having preserved several documents relative to the times of the ancient Britons and Saxons, from chronicles now lost. The best edition is that of 1642, fol.

HIGH, **ALTUS**, a term of relation applied to a body, considered, according to its third dimension, or its elevation above the horizon, or even above the ground.

HIGH is also used to denote a person in power, dignity, &c.

HIGH Chancellor, *Lord*. See **CHANCELLOR**.

HIGH Church. See **CHURCH**.

HIGH-Bearing Cook. See **COOK**.

HIGH Commission Court. See **COMMISSION**.

HIGH Constable of England. See **CONSTABLE**.

HIGH Court of Parliament. See **PARLIAMENT**.

HIGH and Dry is a phrase, among *Seamen*, denoting the situation of a ship when she has run a-ground, so as to be seen dry upon the strand.

HIGH Dutch is the German tongue in its greatest purity, as spoken in Misnia, &c. See **TEUTONIC**, &c.

HIGH, in *Musick*, is sometimes used in the same sense with *local*, in opposition to *low*; and sometimes in the same sense with *acute*, in opposition to *grave*.

HIGH Operation, in *Surgery*, is a method of extracting the stone; thus called, because the stone is taken out at the upper part of the bladder.

For the method of performing the high operation, see **LITHOTOMY**.

The high operation is said to have been first practised by Rossetus: others say by Franco, a surgeon of Lausanne. It was retrieved by Mr. Douglas, and practised with good success by Mr. Cheselden and others.

HIGH-Peak of Derbyshire, in *Geography*, has too often been mentioned as denoting some particular precipice, or frightfully rugged district, instead of being only one of the hundreds of the county, and including a great portion of well cultivated and populous tracts. What further shews this mistake, as Mr. Farey observes in his "Report on Derbyshire," is, that the Low Peak hundred, or wapentake of Wirksworth, includes all the high and rugged lands on the west border of Derbyshire, from Ashbourn, almost to Whaley bridge, including Axe-edge, and others of its highest hills.

HIGH Places. See **GROVE**.

HIGH Point, in *Geography*, a cape on the N. coast of the island of Barbadoes. N. lat. 13° 22'. W. long. 58° 30'.

HIGH Priest. See **PONTIFEX**.

HIGH Relievo. See **RELIEVO**.

HIGH Sea, or ocean, is that far from land. See **SEA**.

HIGH Steward, Lord. See **STEWARD**.

HIGH Taper, in *Botany*. See **MULLEIN**.

HIGH Town, in *Geography*, a town of America, in the state of Georgia; 112 miles W. of Tugeloo.

HIGH TOR, at Matlock, is the name of a very high and perpendicular rock of lime-stone alternating with load-stone, amygdaloid, or basalt, close on the E. side of the Derwent river, about $\frac{1}{2}$ d of a mile S.W. of Matlock church: a section of the strata in this remarkable cliff may be found in the Philosophical Magazine, vol. xxxi. plate 2.

HIGH Treaſon. See TREASON.

HIGH Treaſurer, Lord. See TREASURER.

HIGH Water, is that state of the tides when they cease to flow up, or the greatest height of the flood-tide. See TIDE.

HIGH-waved Cockle, in *Natural History*, is the name of a species of fossil-shells, found in great numbers in the Bath free-stone, on King's Down, near Bath, along with other shells, called pundibs, and two other kinds. Mr. Walcott, in his petrifications found near Bath, figure 30, represents this shell, and describes it as having many ribs from the hinge to the hedges; beak-pointed; margin with a high wave: and says that it is common on the ploughed fields of some stone-brack soils.

HIGH-Way, Via Regia, a free passage for the king's subjects; on which account it is called the king's high-way though the freehold of the soil belongs to the lord of the manor, or the owner of the land. (2 Inst. 705.) Those ways that lead from one town to another, and such as are drift or cart-ways, and are for all travellers in great roads, or that communicate with them, are high-ways only; and their reparation is under the care of surveyors. A nuisance in a high-way is a common nuisance, and punishable by indictment; but a way to a parish-church, or to the common fields of a town, or to a private-house, or, perhaps, to a village which terminates there, and is for the benefit of the particular inhabitants of such parish, house, or village only, may be called a private-way, but not a high-way, because it belongeth not to all the king's subjects, but only to some particular persons, each of whom, as it seems, may have an action on the case for a nuisance therein. (1 Hawk. 201.) So if I have a private way without a gate, and a gate is hung up, an action lies upon the case, for I have not my way as I had before. (Litt. R. 267.) So if one grants me a way, and afterwards digs trenches in it to my hindrance, I may fill them up again. (Godb. 53.) All private ways are to be repaired by those who use them.

A river that is common to all men, is also called a high-way. 1 Hawk. 201.

Where a high-way lies within a parish, the parish is bound to repair it, unless it appears that the same ought to be repaired by some particular person, either by reason of tenure or prescription. At common law it is said that all the country ought to make good the reparations of a high-way, where no particular persons are bound to do it, because the whole country have their ease and passage by that way.

If a high-way leading through a field is out of repair, travellers may justify going out of the track, though there be corn sowed; and in case a high-way is not sufficient, any passenger may break down the inclosure, and go over the land adjoining, until a sufficient way be made. All kinds of injuries to high-ways, that render them less commodious to travellers, are deemed nuisances; such as laying logs of timber in them, erecting gates, or making hedges across them, permitting boughs of trees to hang over them, &c. By stat. 13 Geo III. cap. 78. no tree or bush is to be allowed to grow or stand within fifteen feet of the centre of the high-way, on forfeiture of 10s. by the owner. The possessors of land next adjoining shall cut, prune, or plash their hedges, and lop trees growing in or

near such hedges, or be liable to a complaint of the surveyor, after ten days notice; and the justices at a special sessions shall order such hedges to be cut or plashed, and such trees to be lopped; and the possessor, who refuses to comply within ten days after notice of such order, shall forfeit 2s. for every twenty-four feet in length of such hedge, and 2s. for every tree; the surveyor shall order the same to be done, and the possessor, beside the penalties, shall pay the charges of doing the same, to be levied by distress, by warrant of one justice. The occupiers of such lands shall keep their ditches, drains, and water-courses, in proper order, on forfeiture of 10s. after ten days notice given by the surveyor. No stone, timber, soil, or other matter, shall be laid in the high-way, so as to obstruct or prejudice it, and remain there five days after notice by the surveyor, on forfeiture of 10s. and if such stone, &c. shall be laid within fifteen feet of the centre of the high-way, the owner of the adjacent lands, after five days notice, may remove and dispose of the same to his own use. Persons making incroachments on the high-way by any fence, or breaking up the soil, within fifteen feet from its centre, shall forfeit 40s. to the informer, and the surveyor shall cause the damage to be repaired by the offender; and one justice may levy the penalty and expence by distress. The surveyor is required to give written notice to those who offend in these respects; and if they do not comply within twenty days after such notice, he shall proceed to remove nuisances, &c. to cleanse ditches, &c. and to cut hedges, &c. at the expence of the offender, who shall besides forfeit for his neglect one penny for every foot in length. If the high-way is wilfully obstructed by carriages or implements of husbandry, the person offending shall forfeit 10s.

It is farther enacted by the same statute, 13 Geo. III. cap. 78. that no driver of any cart, dray, or waggon, shall ride upon such carriages, without having some person on foot to guide the same, excepting such carriages as are conducted by persons holding the reins of the horse or horses drawing them; or damage or obstruct the passage of any person or carriage in the street or high-way, or quit the high-way, or wilfully be at such a distance from his carriage, so that he cannot have the government of the horses, &c. drawing the same; or refuse or neglect to make way for loaded carriages; or drive a carriage not having the owner's name, and refuse to discover it, under the penalty of forfeiting any sum not exceeding 10s. if the driver be not the owner of the carriage; and if he be the owner, any sum not exceeding 20s. on conviction by confession, view of the justice, or oath of one witness, before one justice. Owners of carriages are also required to have their names and places of abode painted in large legible letters on some conspicuous part; and the owner of every stage waggon, or cart, shall, moreover, have the following words, *common-stage waggon*, or *cart*, as the case may be, under the penalty of a forfeiture not exceeding 5l. nor less than 20s. And no ale-houses shall be kept by toll-collectors at any public bridge, under a penalty of 5l.

It is also enacted by the same statute, that the justices shall issue their precept to the surveyor, requiring him to erect posts or stones in places where several high-ways meet, with inscriptions on them in large legible letters, containing the names of the towns or chief villages to which the several ways lead; and also in places subject to floods, inscribed with marks denoting the greatest depth of the water: and if he shall neglect or refuse for three months, he shall forfeit 20s. And if any persons remove or destroy posts, blocks, banks, &c. set up for the security of horse and foot
caufeways,

HIGH-WAY.

cuttings, or the battlements of bridges, or destroy or even deface any mile-stone or direction post, they shall forfeit, on conviction on the oath of one witness, before one justice, or upon view of the justice, a sum not exceeding 5*l.* nor less than 10*s.* and on default of payment be committed to the house of correction for any term not exceeding one month, nor less than seven days.

The same statute farther enjoins, that no waggon, the fellics of whose wheels are nine inches broad, shall be drawn with more than eight horses, nor carts of the same dimensions with more than five horses; and no waggon, the fellics of whose wheels are six inches broad, and rolling on each side a surface of nine inches, shall be drawn with more than seven horses; and no waggon rolling a surface of six inches only, with more than six horses: nor cart, the breadth of whose wheels is six inches, with more than four horses; and no waggon, the fellics of whose wheels are of less breadth than six inches, shall be drawn with more than five horses, nor cart of the same breadth with more than three horses: the owner that offends against these regulations shall forfeit 5*l.* and the driver, not being the owner, 10*s.* for every horse above the proper number, to the sole use of the informer. But carriages moving upon wheels or rollers, of the breadth of sixteen inches on each side with flat surfaces, shall be allowed to be drawn with any number of horses. No regulations affecting the number of horses, and wheels of carriages, shall extend to carriages used in carrying one stone or block of marble, cable rope, piece of metal, or piece of timber, or to such ammunition and artillery as may be required for his majesty's service. For all the purposes of this act two oxen, or horned cattle, shall be considered as one horse.

By the common law, no high-way can be changed without the king's licence first obtained, upon a writ of *ad quod dampnum*. In aid of the common law, and to render the changing of high-ways less troublesome and expensive, power is given by 13 Geo. III. cap. 78. to the justices of the peace to widen, divert, and change high-ways, as they shall judge most convenient. And it is enacted that the surveyor shall make every public cart-way leading to any market town, twenty feet wide at the least, and every public horse-way or drift-way eight feet wide at the least, wherever the ground between the fences shall admit of it; or on the view of two justices, it shall be widened or diverted at their pleasure, provided that its breadth exceeds not thirty feet, and that no houses or buildings are pulled down, or any garden, park, court, or yard, taken away; and the owners of the ground, which shall be laid into the high-way, or through which it shall pass, shall be recompensed for it, and every injury redressed. The expences of making, repairing, &c. high-ways, are defrayed by equal assessments, made by the warrant of a justice, at a special sessions, on all occupiers of lands, tenements, woods, tithes, and hereditaments; provided that no such assessment in one year shall exceed sixpence in the pound. In extraordinary cases another assessment may be made, provided this and the preceding shall not in any one year exceed the rate of ninepence in the pound.

By the same statute the justices are enjoined to hold a special sessions for the high-ways, in the week next after the Michaelmas general quarter-sessions yearly; and notice shall be given to the constables of the respective parishes at least ten days before it shall be held. Surveyors of the high-ways are to be chosen yearly out of a list of proper persons, nominated by the householders, assessed to any parochial or public rate, by the justices at their sessions; and their number shall depend on the extent of the parish, &c. But no

person is liable to be appointed to serve this office within three years from the time of his having served it, without his own consent. Those who refuse to serve, after having been nominated by the parish and justices, shall forfeit 5*l.* and if they were only nominated by the justices, they shall forfeit 50*s.* In this case, the justices may appoint a proper person to this office, with a salary not exceeding one eighth part of what shall have been raised by assessment of sixpence in the pound for the use of the high-ways in the district where the assessment hath been raised; and they shall also appoint one substantial inhabitant of such parish, &c. for assistant to such surveyor, till the next annual appointment, whose refusal incurs a forfeiture of 50*s.* And if a second person refuse, he shall also forfeit 50*s.* and a third shall be appointed, with a salary. Special surveyors returned to the justices by two parts out of three of those who have the choice, with a settled salary, may be appointed by them with the said salary. In case of the death of a surveyor, two justices at a special sessions may appoint another in his room.

It is the business of the surveyor to preserve high-ways in proper repair, &c. For this purpose it is enacted by the statute (34 Geo. III. c. 74.) that every person keeping a team, draught, or plough, *i. e.* who keeps a waggon, cart, wain, plough, or tumbrel, and three or more horses or beasts of draught, shall six days in the year furnish one wain, cart, or carriage, and other necessaries, and two able men, on the day and place appointed by the surveyor. Those who occupy lands of 50*l.* a year shall do the same; and in like manner for every 50*l.* a year respectively. Those who occupy lands under 50*l.* shall pay to the surveyor, in lieu of the duty, for every 20*s.* annual value of their land, &c. one penny for every day's statute duty, &c. and the same for every 20*s.* above the annual value of 50*l.* and less than 100*l.* Persons keeping a team, but occupying land of the yearly value of 30*l.* shall be obliged to send only one labourer with such team. Persons not keeping a team, but keeping one or more cart or carts, and one or more horses, shall send one labourer with each cart; and persons keeping a wheel-carriage, but no team, nor occupying 50*l.* a year, in the parish, township, or place where he resides, shall pay to the surveyor 1*s.* in respect of every day's statute duty, for every horse which he shall use in such carriage. Every inhabitant eighteen years of age, and upwards, but under sixty, nor chargeable in any other way for 4*l.* a year, or upwards, and not being an apprentice or menial servant, or not having served or compounded in any other place for that year, shall go in person, or find a labourer, on each of the aforesaid days. Carriages shall be changed, at the discretion of the surveyor, for men, three being allowed for each team, or 4*s.* 6*d.* shall be paid in lieu of them. Persons liable to perform statute duty may compound at such rates as the justices shall think fit, not exceeding 6*s.* nor less than 3*s.* for each team, for each day, or, in default of their adjudging the same, the sum of 4*s.* 6*d.*; for every cart and one horse 2*s.*; for every cart with two horses 3*s.* in lieu of each day's duty. And every inhabitant liable to perform such duty, and not chargeable in any other respect, may compound for 4*l.* each day. The surveyor shall give four days notice to those whose attendance is required, and they shall bring with them their own tools, continue at work for eight hours in each of the appointed days; and defaulters in finding a team, &c. shall forfeit 10*s.* those in sending a cart with one horse and man, 3*s.* for not sending a cart with two horses and one man, 5*s.* and for each labourer 1*s.* 6*d.* Surveyors for neglect of duty, where no particular penalty is imposed, shall forfeit a sum

sum not exceeding 5*l.* nor less than 10*s.* at the discretion of the justices. All defects of repairs of high-ways shall be presented in the county where they lie: and the indictment must shew, that they are high-ways; also the places from and to which they lead: where the nuisance was done, and how far it extends; it must likewise state the fact clearly. Justices may present on their own view. For the farther regulations relating to high-ways, the principal of which have been already recounted, the reader is referred to 13 Geo. III. cap. 78.

HIGH-ways, turnpike. See TURNPIKE.

HIGH-way men, are robbers on the high-way; for the apprehending and taking of whom, a reward of 4*o**l.* is given by the statute of 4 W. c. 8. to be paid within a month after conviction by the sheriff of the county; to which the statute 8 Geo. II. cap. 16. superadds 10*l.* to be paid by the hundred indemnified by such taking.

HIGHAM FERRERS, in *Geography*, a borough, market-town, and parish in the hundred of the same name, in the county of Northampton, England, is a place of considerable note, and is situated on a rocky elevation, abounding with springs, about half a mile from the northern banks of the Nen. Northward of the church, is a space called the Castle-yard, the scite of a castle, which is supposed to have been erected by one of the Ferrer's family. But it more probably owes its origin to Thomas, earl of Lancaster, son of Edmund, the younger son of Henry III.; who obtained this lordship in the fiftieth year of that monarch's reign. This nobleman, in the fifth of Edward II., was at the head of the association, which, under the pretext of supporting public liberty, demanded and obtained the dismissal of Piers de Gaveston, the royal favourite. The Castle-yard is divided into two parts, by a deep foss, running from east to west. That on the south side contains about two acres: the only remains are hollows, heaps of ruins, and foundations of walls. The northern division, both in extent and strength, appears to have been the most considerable work. It comprises nearly four acres, having on the east side a very large moat, about fifty feet wide, and five hundred long; and another on the south side of similar dimensions. This, it is conjectured, was the scite of the castle; and the space to the south, the situation of the advanced and covering works. The church is a handsome structure: at the west end of the nave, on a handsome embattled tower, is raised a finely proportioned hexagonal spire; the western front of the tower displays some curious architectural features; at the base is a pointed arched door-way, with two openings for doors beneath flattened arches: the surrounding jambs, pediment, &c. are charged with sculpture of figures, foliage, &c. On each side of the chancel are ten stalls; one ornamented with a carved head of archbishop Chichele; another with his arms; the rest with various enigmatical devices. In the chancel is an inscription to the memory of the archbishop's parents. This prelate founded a college here in the year 1422, for eight secular canons. The building, now in a ruinous state, was some years since converted into an inn: a portion of the revenues forms the endowment of the present free-school. He also founded and endowed the Alms, or Bead-house, for twelve poor men and one woman.

Higham is a borough by prescriptive right, and was incorporated in the reign of Philip and Mary. The corporation comprises a mayor, seven aldermen, thirteen capital burgesses, and other inferior officers. The aldermen are chosen out of the burgesses; and the mayor annually elected from the body of aldermen. The mayor has a right of holding a court every three weeks, for determining actions for debt, in any sum under forty pounds. The borough,

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by virtue of the same charter, returns one member to parliament; the elective franchise being vested in all the inhabitants not receiving alms. The town is small, consisting of two streets, a lane, and what is here called the market-lead, in which stands a cross, bearing a cube at the top, and on the four sides are carved in stone different figures, emblematic of the crucifixion. By the returns under the population act, the number of houses is 125; of inhabitants, 726. From its formerly having had three weekly markets, it was probably then much more populous. Those kept on Mondays and Thursdays have long been disused, and the one held on Saturday is much decayed; though here are still seven well accustomed fairs. The distance from London is 64 miles. Higham is particularly noted as the birth place of Henry Chichele, who was archbishop of Canterbury in the reigns of Henry V. and VI.; of whose love of learning and liberal encouragement for its diffusion, the noble institutions he founded and endowed are strong and lasting monuments. Bridges's History of Northamptonshire, 2 vols. fol.

HIGHGATE, a populous hamlet, principally in the parish of Hornsey, and hundred of Ossulston, Middlesex, England, occupies, as its name partly implies, a high situation. It is about four miles north of London, and its buildings are irregularly dispersed over a large extent of ground, along the ridge, and down the sloping declivities of a hill. This place is said to derive its name from a gate-house, or gate, that was formerly standing at the top of the hill, and belonged to the bishops of London, who exacted toll from all persons with carriages, horses, cattle, &c. that passed through it. Before this toll-bar was raised and road formed, the road from London to Barnett and northwards, was through Hornsey-park to Colney-Hatch, &c., but this being very "miry and deep in winter," as Norden states, it was agreed between the bishop of London and the landholders in this part of the country, that a new road should be formed "through the park, at Highgate Hill," by the former, and that he and his successors should be authorized to collect toll from all passengers. At the time Norden wrote, this toll was farmed for 4*o**l.* annually; and in 1794 it was rented at 15*o**l.* a year. The gate-house was taken down in 1769, when the road "was opened at the joint expence of the Islington and Whetstone trust," as expressed on a board attached to a tavern built on the scite of the old toll-house. Tolls are still demanded for cattle, loaded carriages, and horses for sale. Near the gate-house is the parochial chapel, one aisle of which was erected in 1565, and the other at a later period. It contains two or three monuments with busts, &c., and in it some persons of eminence have been interred. Among whom the following names occur: William Platt, esq., who died in 1637; Lewis Atterbury, LL. D. obiit 1731; sir Francis Pemberton, died 1697. Connected with the chapel is a free-school house, which owes its erection to sir Roger Cholmeley, knight, chief justice of the Queen's Bench in 1562, who also bequeathed a legacy to defray the education of poor boys of Highgate, and to support a master, &c. The school-house occupies the scite of an ancient hermitage. Highgate is noted, among the lower classes of the community, for a silly, burlesque, nugatory oath, which the inhabitants of some of the public-houses occasionally administer to their visitors. A pair of large horns is placed on the head of the person, and he is required to swear "that he will not eat brown bread when he can get white; will not drink small beer when he can get strong; will not kiss the maid when he can kiss the mistress," &c. This absurdity was probably invented by a cunning publican, to attract customers, and his scheme at first gave considerable publicity to the

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house

house and village, but is now seldom employed. Highgate is a great thoroughfare to the northern parts of England and Scotland. Hence a vast number of coaches, waggons, &c. pass through it daily. The hill, from Holloway to the chapel, is long and steep. To avoid this steep ascent different schemes have been proposed at different periods, but hitherto all that has been effected to obviate the evil, or lessen its force, is a removal of some feet of earth from the summit of the hill, and placing it at the bottom. In the year 1808 a new and novel scheme was proposed by Mr. Robert Varie, an engineer, to form an arched subterraneous tunnel, for a public road, through Highgate-hill, and this plan is now prosecuting with avidity.

HIGHGATE, a township of America, being the north-westernmost except Alburgh, in Vermont, Franklin county, containing 324 inhabitants.

HIGHLAND CREEK, a river of America, in Kentucky, which runs into the Ohio. N. lat. $37^{\circ} 32'$. W. long. $88^{\circ} 22'$.

HIGHLAND Point, a cape on the N. E. coast of New Zealand, at the entrance of Lowland bay. S. lat. $37^{\circ} 48'$. W. long. $182^{\circ} 16'$.

HIGHLANDS, a mountainous tract of country in America, on the banks of Hudson's river, in the state of New York, between 40 and 60 miles N. of New York city. The passage on the river, through these highlands, for the distance of about 18 miles, is very grand and romantic. In these highlands are situated the important fortresses of West Point, Fort Montgomery, and Stony Point. These mountains abound with iron ore.

HIGHLANDS, a natural division of Scotland, formed by the Grampian mountains, and including the northern and mountainous provinces, and applied to this part of the country in contra-distinction to the "Lowlands," which comprehend the southern districts. The appellation of Highlands is more strictly confined to Argyleshire, the coast of Perthshire, and of Inverness, and the entire counties of Ross, Sutherland, and Caithness, extending also to the Hebrides or Western isles. The whole of this district is wild, rugged, and mountainous, separated by vales, from which the direct rays of the sun are for some months intercepted by the elevated mountain, and into which the rivers flowing from them are precipitated. The three principal rivers, formed by numerous streams and torrents issuing from the hills, are the Tay, the Spey, and the Forth. Before the commencement of the last century, little or no communication subsisted between the Highlands and Lowlands, as they were unconnected by regular roads and bridges, and the entries from the one to the other, were, for the greater part of the year, impassable. In order to facilitate an intercourse between these different parts of the country, general Wade, under a commission from George I., travelled, in 1724, to the most difficult and dangerous passes of the mountains, and projected the bold undertaking of forming spacious roads in these rugged districts. In 1726 he began the work, and by means of five hundred soldiers, employed under proper officers, in the summer season, he completed it in 1737. These roads were two hundred and fifty miles in length, and from twenty to twenty-five yards broad, guarded from the injuries of the rains and torrents, to which they were subject, by aqueducts and side-drains. The huge stones raised out of the ground by means of engines, are set up by the road side, to serve as guides in deep snows; and at each interval of five measured miles, pillars are erected, on which the number of miles is inscribed. The roads enter the mountains at three different parts of the low country; one at Crieff, 24 miles N. of Stirling; another at Dunkeld, 12 miles N. of Perth; and

the last goes along the side of Loch-Lomond, in Dunbartonshire, by Lufs. Since the period in which Gen. Wade finished his operations, the military roads have been farther extended, and a ready communication has been opened with every part of the country. Before the period to which we have now referred, the Highlands of Scotland were in a state somewhat similar to that of England before the Norman conquest. The inhabitants, who were a branch of the ancient Celts, probably the first inhabitants of Britain, and who have since been called Caledonians, were divided into tribes, called clans. Those of the inferior order were vassals of particular chiefs, to whom they were attached, and on whom they relied for that safety which the laws could not afford them. On the other hand, the security and consequence of a chieftain depended on the number and fidelity of his servants and retainers; who, on account of their relation to him, assumed a dignity, and acquired in their manners a degree of politeness, to which other uncivilized nations are strangers. The rents of farms which these vassals occupied were inconsiderable, and were chiefly paid by military service: so that the value of a proprietor's land was estimated, not by the money it produced, but by the men whom it could send into the field; and that the number of dependants might be increased, the farms or allotments of land were small, and barely sufficient for the scanty subsistence to the tenants. As an inconsiderable proportion of the country was cultivated, and as no intercourse subsisted between the inhabitants and any other nation; little time was employed in agriculture and commerce. The greatest part of it was consumed in indolence or amusement, unless when their superior summoned them to avenge on some neighbouring tribe an insult or injury. No more grain was raised; nor was any more raiment manufactured by any family than that which barely sufficed itself. Villages and hamlets, situated in vallies for shelter, were rudely constructed of turf and stone. In spring the natives ploughed or dug some adjacent patches of soil, in which barley or oats were sown; in summer they prepared and collected turf and peat for fuel; in autumn they gathered in their scanty crops of grain and hay; and the residue of the year was devoted to pastime or predatory excursions. In winter evenings, around a common fire, the youth of both sexes generally assembled for the song, the tale, and the dance. A taste for music was prevalent among them. Their vocal strains were plaintive and melancholy; their instrumental airs were either lively for the dance, or martial for the battle. In the time of Ossian, of ancient celebrity, the harp was the chief instrument of music; its simplicity suited the mildness of their manners, and its wild notes were well adapted to the poetical effusions of the bards. In a later period, when the quarrels of their chieftains embroiled them in a state of almost continual warfare, the harp yielded to the bagpipe, an instrument of the most warlike kind, which still continues to supply the most favourite music. The greater part of the Highland music, especially the most ancient, as suited to the harp, is of the soft, tender, and elegiac cast, chiefly expressive of the passions of love or grief; many of the latter pieces are sprightly and cheerful, adapted to the regions of fancy and of festivity. Other pieces are of a martial nature, every note of which is expressive of rage or fury. They have also a mixed species of music, intended to commemorate some great battle or contest, when the elegiac, the martial, the mournful, and the joyful are united; but of all these the favourite of the Highlanders is that species called "Strathispey reels," used in their dances. Every family of note retained an historian to narrate its heroic deeds and feats of valour, or a bard, who sung the praises of the chieftain and his clan. Some fragments of their poetry

try have been handed down from remote ages, and recently moulded into heroic poems, of which we have a specimen in the poems of Ossian. Since the extinction of the order and office of bards, the Gallic poems and tales are in a great measure lost or adulterated. The language of the Highlanders is still the Gaelic (see *GÆLIC*); and the genius and character of its poetry are well known; being tender, simple, beautiful, and sublime. Strangers, who have ventured to penetrate into the fastnesses of the Highlanders, have been received and treated in the most hospitable manner; but, as for themselves, they seldom wandered, except for the purposes of devaluation or plunder. The dress of the country was the last remains of the Roman habit in Europe, well suited to the nature of the country and the necessities of war. It consisted of a light woollen jacket, or tartan, woven in squares of various colours, in which red, green, blue and black are most prevalent. The feil-bag, or kilt, is a short petticoat of the same stuff, reaching to the knees; and the hose, or short stockings, are woven in diamonds of red and white, tied under the knee with garters, often beautifully ornamented: the Highlanders have generally a pouch made of the skin of a badger, fox, or other animal, hanging before, in which they keep their tobacco and money, and this part of their dress is generally adorned with silver buttons and tassels; their plaid is also of tartan, consisting of twelve or thirteen yards of cloth, wrapped round them in a graceful manner, fastened round the middle by a belt, falling to the knees behind, and confined by a brooch or silver pin to the top of the left shoulder: this is often their only cover, both within doors, and when obliged to repose in the fields. The truis or trews, which are a sort of tartan pantaloons, are only worn by the gentry, instead of the kilt. Indeed, sir John Sinclair contends, that the trews were the most ancient dress of the Highlanders, and that the kilt is of comparatively modern introduction. The Highlanders generally affected to have their dress of the colour of the heath on which they reposed, probably from a principle of security in time of war, or that they might not be discovered while they lay in the heaths, waiting for their game. Their ancient arms were the broadsword and target, Lochaber axes, (now only used by the town-guard of Edinburgh,) and a dirk (short dagger), to which, before the act for disarming the Highlanders, in 1748, the pistol stuck into the girdle had been added. Always armed with a dirk and pistol, they were ready to resist an assault, or revenge a provocation, as soon as it was given. This circumstance contributed to render them polite and guarded in their behaviour to one another. When embodied by their chieftain, they were armed with a broadsword, a dagger, a target, a musket, and two pistols. In close engagement, and in broken ranks, they were irresistible. The only foe they dreaded was cavalry. As soon as the battle was over, most of the troops dispersed, and returned home to dispose of their plunder, and to provide for their families. Their religion was deeply tinged with superstition. They believed in ghosts and apparitions; by appearances in the heavens they predicted future events; they practised charms and incantations for the cure of various diseases; and to some individuals they thought the divinity had communicated a portion of his prescience.

The state of Society in the Highlands has been greatly changed and ameliorated since the rebellions in 1715 and 1745. The Roman dress and the use of arms were prohibited by government; roads, as we have already observed, constructed at a vast expence, opened an easy communication with the low country; and the courts of barons were suppressed by the jurisdiction act. The heads of clans have now ceased to be petty monarchs; and the services of their vas-

sals are no longer requisite for their defence or aggrandisement. Divested of their legal authority, they now endeavour to preserve their influence by wealth. With this view their attention is directed to the improvement of their estates. Their ancient mode of living is also entirely altered; and the Highland gentleman, in every respect, differs little from a proprietor of the like fortune in the southern country. A spirit of industry has been excited among the tenants, while, in many places, arts and manufactures are encouraged; and the lower classes are, in consequence of the establishment of schools, provided with the means of education.

“The Highlanders (see *Encycl. Brit. art. Highlanders*), are of a quick and penetrating genius, strongly tinged with a curiosity or thirst of knowledge, which disposes them to learn any thing very readily. They are active and industrious, where oppression does not discourage them by excluding even the hope of thriving. They are remarkably bold and adventurous, which qualifies them for being excellent seamen and foldiers. They are generally of a middle size, rather above it than otherwise: their eyes are brisk and lively, their features distinctly marked, and their persons tight and well made. Their countenance is open and ingenuous, and their temper frank and communicative.”

HIGHLANDERS, in *Rural Economy*, a term frequently applied to the highland, and some other sorts of Scotch cattle.

HIGHMORE, JOSEPH, in *Biography*; one among the most successful portrait-painters in England from the time of sir Godfrey Kneller (under whom he is said to have studied, and who particularly noticed him, by distinguishing him as the “Young Lawyer”), till the days of Hudson, and his incomparable pupil Reynolds. He was the third son of Mr. Edward Highmore, a coal-merchant in Thames-street, and nephew of Mr. Highmore, serjeant-painter to king William, with whom Mr. (afterwards sir John) Thornhill served his apprenticeship. He was born in the parish of St. James, Garlickhithe, June 13th 1692, and was first intended for the law, and articulated as clerk to an attorney in 1707; but he left it for painting, to which his inclination had always attached him, and was much employed. His leisure hours had been uniformly devoted to the art of designing, and to the study of geometry, perspective, architecture, and anatomy; and he made great proficiency in these several departments of science, though he had no other instructors than books. Afterwards, indeed, he had an opportunity of attending the anatomical lectures of Mr. Cheselden, and he entered himself at the Painter’s Academy, in Great Queen-street, where he drew for 10 years. It was in the year 1715, on the expiration of his clerkship, that he commenced the practice of painting as a profession, and settled in the city. In this year Dr. Brook Taylor published his “*Linear Perspective*,” whose theory our author adopted, and upon which he grounded his subsequent practice; and it has been allowed that few, if any, of the profession were so well acquainted with that excellent, though in some respects intricate, system. As his reputation and business increased, he removed from the city to Lincoln’s-Inn-Fields, in March 1723-4, where he had an opportunity of introducing himself to the nobility, by engaging with Mr. Pine, the engraver, to make drawings for his prints of the knights of the Bath. In the summer of 1732 he visited the continent; and at Antwerp he had peculiar pleasure in contemplating the works of Rubens, his favourite master. In 1734 he made a similar excursion to Paris, where he had the satisfaction of being shewn, by cardinal de Polignac, his famous group of antique statues, the court of Lycornes, then just brought from Rome. In 1750 he had the misfor-

tune to lose his excellent wife, daughter and heirs of Mr. Anthony Hiller, of Effingham, in Surrey, whom he had married in 1716. On the first institution of the Academy of Painting, Sculpture, &c. in 1753, he was elected one of the professors, an honour which, on account of his numerous avocations, he was under a necessity of declining. His principal works were the portraits of the knights of the Bath, on the revival of that order in 1725. In 1754 he published "A critical Examination of those two Paintings (by Rubens) on the ceiling of the banqueting-house at Whitehall, in which architecture is introduced so far as relates to perspective; together with the discussion of a question which has been the subject of debate among painters, viz. "Whether parallel perspective be at all times just?" Another literary work gained him more applause, viz. "The Practice of Perspective, on the Principles of Dr. Brook Taylor," &c. written many years before, but not published till 1763. In 1765 he published, without his name, "Observations on a Pamphlet, entitled Christianity not founded on Argument." He also published, with his initials, J. H. two small volumes of "Essays, Moral, Religious, and Miscellaneous, with a Translation, in Prose, of Mr. Brown's Latin Poem on the Immortality of the Soul." He also communicated to the public, through the medium of the Gentleman's Magazine, for 1769, "A natural and obvious Manner of constructing Sun-dials, deduced from the Situation and Motion of the Earth with respect to the Sun;" and in that for 1778, his remarks on colouring suggested, by way of a note on the "Epistle to an eminent Painter." Of his numerous portraits, during an extensive practice of 46 years, several of which have been engraved, our limits will not allow us to give a minute detail. Some of the most capital of his performances in the historical branch were "Hagar and Ishmael," a present to the Foundling hospital; "The good Samaritan;" "The finding of Moses;" "The Harlowe Family," as described in Clarissa; "Clarissa;" "The Clementina" of Grandison; and the "Queen-mother of Edward IV. with her younger Son, &c. in Westminster Abbey." In 1761 he retired from business, and in 1762 removed to the house of the Rev. Mr. Duncombe, who had married his daughter, at Canterbury, where he passed the remainder of his life, without ever revisiting the metropolis. His mind, however, retained its powers of activity, and he was always usefully as well as agreeably employed. A strong constitution, habitual temperance, and constant attention to his health in youth, as well as age, prolonged his life, and preserved his faculties to his 88th year; and he may be said to have fallen asleep on March 3, 1780. He was interred in the south isle of Canterbury cathedral, leaving one son, Anthony, educated in his own profession, and a daughter, married to Mr. Duncombe. His talents and character will be respected by all who have a taste for the arts and for principles of religious virtue, exemplified by a corresponding practice. One of his grandsons, Anthony Highmore, esq. is now an eminent solicitor in London, and traces the footsteps of his ancestor by his general conduct.

HIGHMORE, NATHANIEL, a physician and anatomist, was born at Fordingbridge, in Hampshire, on the 6th of February 1613. He went to Oxford, where he was elected a scholar of Trinity College in 1632; and took his degree of M.D. in 1642. He settled at Sherborne, in Dorsetshire, where he obtained a considerable share of reputation in the practice of his profession. He died on the 21st of March 1684, at the age of 71, and was buried at Candlepurse in that county, of which place his father had been rector. Dr. Highmore, though with limited opportunities of dissection, pursued the study of anatomy with zeal, and

his name has remained attached to some discoveries not strictly his; as that of the *antrum maxillare*, of which he obtained a view from an extracted tooth, which suggested the operation of piercing into it from the jaw, practised by Cowper. Caserius had mentioned the cavity under the name of *antrum genæ*. His principal work is, "Corporis humani Disquisitio Anatomica," printed at the Hague in 1651, in folio. The descriptions in this work are too brief, and the reasonings unnecessarily copious; and the figures chiefly copied from Vesalius. His other writings are, "Exercitationes duæ, quarum prior de passione hystericâ, altera de affectione hypochondriacâ," Oxon. 1660. These dissertations abound with physiological remarks and hypotheses, some of which are ingenious, but were attacked by Dr. Willis. In consequence of this, Highmore printed, in 1670, "De hystericâ et hypochondriacâ passione, Responso Epistolâ ad Willisium." He likewise published "A History of Generation," 8vo. 1651, which has some good figures of the embryo in the egg, during the state of incubation. Gen. Biog. Eloy. Dict. Hist.

HIGHNESS, a quality, or title of honour, given to princes.

The kings of England and Spain had formerly no other title but that of highness; the first, till the time of Henry VIII. and the second, till that of Charles V. See KING.

The petty princes of Italy began first to be complimented with the title of highness in the year 1630. And the duke of Orleans assumed the title of royal highness, in the year 1651, to distinguish himself from the other princes of France.

The duke of Savoy, afterward king of Sardinia, bore the title of royal highness, on account of his pretensions to the kingdom of Cyprus. It is said that the duke only took the title of royal highness, to put himself above the duke of Florence, who was called *great duke*; but the great duke has since assumed the title of royal highness, to put himself on a level with the duke of Savoy.

The prince of Condé first took the title of most serene highness, leaving that of simple highness to the natural princes.

At present, all the sons of crowned heads are styled royal highness, as the electors of Germany are called electoral highness.

HIGHWORTH, in *Geography*, a market town and parish in a hundred of the same name, and county of Wilts, England, is situated on a hill, whence its name appears to have been derived. It was formerly called a borough, but at present has no other privileges than the right of electing a mayor and aldermen, who possess some nominal powers. The parish of Highworth consists of about 2000 acres of land, and comprises several chapels and hamlets. The principal of these is Seven-hampton, a chapelry annexed to this vicarage. In this the Warneford family long had a seat; and built for themselves a private oratory, or a monumental chapel, on the south side of Highworth church, wherein there are some pieces of ancient armour. In the same church is a mural tablet to the memory of sir John Croft, bart. of Dunstan Park, Berkshire, who died in 1797. Against one of the pillars is a table, containing a long list of charitable donations to the poor. The petty sessions, for the division of Highworth, are held at this town, and a fixed pillory is preserved in the market place. Here are a small weekly market on Wednesdays, and three annual fairs. About three miles W. of the town, in the tything of Broad-blunden, is an ancient encampment, on an eminence called Cattle Hill, near which a Roman road from Spine to Corinium, passed. Two miles eastward of Highworth is Colehill-house,

Mill-house, the seat of lord Folkestone. The house was built from the designs of Inigo Jones. Highworth contained 254 houses in the year 1801, and 1493 inhabitants. Britton's Beauties of Wiltshire.

HIGLER is a name frequently mentioned in our statutes for a person who carries from door to door, and sells by retail small articles of provisions, &c. They are laid under various restraints by the statute laws. See HAWKERS.

HIGUERA, in *Geography*, a town of Spain, in Estremadura; 12 miles north of Xeres de los Caballeros.—Also, a town of Mexico, in the province of Cinaloa; 28 miles E. of Cinaloa.

HIGUERA, *Cape*, a cape of Spain, on the coast of Biscay. N. lat. 43° 22'. W. long. 1° 55'.

HIGUEY, or YGUEX, *Alta Grecia*, a city in the S.E. part of the Spanish division of St. Domingo, the most easterly of all the settlements in the island, celebrated formerly for its fertility, and for the quantity of sugar which it produced. It has now only about 500 inhabitants, and is distant about 40 leagues E. of St. Domingo.

HIHA, a town of Abyssinia, 40 miles E. of Axum.

HIJAR, or IXAR, a town of Spain, in Aragon; 25 miles S.E. of Saragossa.

HIIS TESTIBUS, *q. d. these witnesses*, in *Law*, a phrase anciently added in the end of a deed, written in the same hand with the deed; upon which the witnesses were called, the deed read, and then their names entered. See WITNESS.

The clause of *hiis testibus*, in subjects deeds, continued till, and in, the reign of Henry VIII. but it is now omitted. Coke on Littleton.

HIKE, in *Rural Economy*, a term implying to strike with the horn, in the manner cattle often do.

HILARIA, in *Antiquity*, feasts celebrated every year, by the Romans, on the eighth of the calends of April, or the 25th of March, in honour of Cybele, the mother of the gods: as is observed by Macrobius, lib. i. cap. 10. and Lampridius, in his life of Alexander Severus.

The hilaria were solemnized with great pomp and rejoicing. Every person dressed himself as he pleased, and took the marks or badges of whatever dignity or quality he had a fancy for. The statue of the goddess was carried in procession through the streets of the city, accompanied by multitudes in the most splendid attire. The day before the festival was spent in tears and mourning. Cybele represented the earth, which, at this time of the year, begins to feel the kindly warmth of the spring; so that this sudden transition from sorrow to joy was an emblem of the vicissitude of the seasons, which succeeded one another.

The Romans took this feast originally from the Greeks, who called it *ανθεσσιον*, *q. d. ascensus*; the eve of that day they spent in tears and lamentations, and thence denominated it *καταθυσσιον*, *descensus*.

Afterwards the Greeks took the name *ιλαρια*, from the Romans; as appears from Photius, in his extract of the life of the philosopher Isidore.

Casaubon maintains, that beside this particular signification, the word hilaria was also a general name for any joyful or festival day, whether public, or private and domestic. But Salmassius does not allow of this.

Tristram, tom. i. p. 482, distinguishes between hilaria and hilaria. The former, according to him, were public rejoicings; and the latter, prayers made in consequence thereof; or even of any private feast or rejoicing, as a marriage, &c. The public lasted several days, during which all mourning and funeral ceremonies were suspended.

HILARION, in *Biography*, the founder of the monastic life in Palestine, was born at Gaza, in 291, of a Pagan fa-

mily, but quitted the errors of his fathers and embraced Christianity. He distributed all his property among the poor, and withdrew into a desert, where he passed his time in solitude and devotion, and acquired a high character for piety and devotion. The number of his disciples soon became very numerous, whom he distributed into different establishments throughout Palestine and Syria, over which he exercised a most vigilant superintendance. He died in the year 371, at the island of Cyprus.

HILARIUSE, JOSEPH, an eminent antiquary and medallist, was born at Enzesfeld, in Lower Austria, in 1737. He was educated among the Jesuits, and afterwards became an eminent teacher of grammar and rhetoric at Vienna, of which college he was appointed *præfectus rei nummarie*. In the year 1770 he renounced the vows of his order, and in a short time after was appointed professor and director of the Imperial cabinet of ancient coins. He was likewise dean of philosophy and the fine arts. He died in 1798, leaving behind him a high character for extensive knowledge, irreproachable morals, and great wit.

HILARODI, *ἱλαροδοι*, compounded of *ιλαρος*, *joyful*, and *ωδη*, *song*, in the *Ancient Music and Poetry*, a sort of poets among the Greeks, who went about singing little merry diverting poems or songs; though somewhat graver than the Ionic pieces.

The hilarodi appeared dressed in white, and were crowned with gold. At first they wore shoes; but afterwards they assumed the *crepida*, which was only a sole, tied over the foot with straps.

They did not sing alone, but had always a little boy or girl to attend them, playing on some instrument.

From the streets they were at length introduced into the tragedy, as the *magodi* were into comedy.

The hilarodi were afterwards called *Simodi*, from a poet named Simus, who excelled in this kind of poetry.

HILARODIA, a poem, or composition in verse, made or sung by a kind of rhapsodists, called hilarodi.

HILARO-TRAGÆDIA, a dramatic performance, partly tragic or serious, and partly comic or merry.

Scaliger holds, the hilaro-tragœdia and hilarodia to be one and the same thing. Others rather take the hilaro-tragœdia to have been pretty nearly what we call a tragic-comedy. Others, again, will have it to have been a pure-tragedy, only terminating with a happy catastrophe, which brings the hero out of a wretched into a fortunate state. But the first opinion seems the most probable, and the best warranted.

Suidas mentions one Rhinthon, a comic poet of Tarentum, as the inventor of this kind of poem: whence it was also called *Rhinthonica fabula*.

HILARY, in *Biography*, was bishop of Poitiers in Aquitania, and flourished about the year 354. He is placed by Jerom among his illustrious men, from whom we learn that, after his conversion to Christianity from the Pagan religion, he became a zealous champion for what was then deemed the orthodox faith against the Arians, labouring to confute them by his writings, and condemning their opinions by the councils which he caused to be assembled at Poitiers. His twelve books on the Trinity, his treatise concerning synods addressed to the bishop of the Gauls, and his Commentaries upon the Psalms, the Gospel of St. Matthew, the Book of Job, and the Canticles, are mentioned by Jerom as his principal works. Of these the last and best edition is that of the Benedictines at Paris, in 1693. Hilary died at Poitiers, in the reign of Valentinian and Valens, about the year 366. In his Prologue to the Commentaries on the Psalms, Hilary gives a catalogue of the books of the Old Testament;:

he appears to have received the Epistle to the Hebrews, though it was not universally received by the Latin Christians, and he often quotes the book of the Revelation, and ascribes it to John the apostle.

HILARY, deacon of Rome, was born in Sardinia, and appointed to his office about the year 354. He is mentioned by Jerom in his account of ecclesiastical writers, who represents him as a zealous Homouſian, and afterwards a rigid Luciferian; and he pleasantly calls him another Deucalion, as if he would bring again an universal deluge on the world, because he was for rebaptizing Arians, and other heretics, when they came over to the church. Differing from other Christians in this particular, he separated from the church, and wrote treatises in favour of his opinion. Cave ascribes to Hilary the "Commentary upon Thirteen of St. Paul's Epistles," usually joined with St. Ambrose's works, which he supposes to have been written before the year 384; and this learned writer considers him also as the author of "Quæstiones in Vetus et Novum Testamentum," written about 370, and usually joined with St. Augustine's works. Several other writers concur with Cave in ascribing the first work to Hilary, but differ with regard to the latter; and indeed both works are much interpolated. Hilary, considered as the author of the Commentaries, &c. quotes most books of the Old and New Testament. Lardner's Works, vol. iv.

HILARY, a faint in the Roman calendar, born at Arles in 401, of noble and very opulent parents, was distinguished while very young by his proficiency in knowledge and the brilliancy of his talents. Having been persuaded by his relation Honoratus, to devote himself to the religious life, he sold his patrimonial estate, distributed the money arising therefrom among the poor, and entered into a monastery, where he subjected himself to the austerities of the cloister, and applied with diligence to theological studies. He was promoted to the see of Arles in the year 429, which forced him from his cloister into the more active scenes of life. Having entered upon the episcopal duties of his see, he discharged them with uncommon zeal and assiduity, setting before his flock an illustrious example of the virtues which he recommended to their practice. He was an eloquent and impressive preacher, and freely reprobated the vices of the great, without being moved by a dread of their displeasure. He presided in a council at Orleans in 441; and died in 449, at the early age of 49. His works are (1) "Homilies;" (2) "The Life of St. Honoratus;" (3) "An heroic Poem on the early part of the Book of Genesis;" and "A short Letter to Eucherius bishop of Lyons," which may be found in the seventh volume of the Biblioth. Patrum. Moreri.

HILARY, or HILARIUS, pope, was a native of Sardinia, and while he was only a deacon in the church, he was sent, with the character of pope Leo's legate, à latere, to assist at the general council summoned to meet at Ephesus, in the year 449, for the purpose of deciding on the questions at issue between Eutyches and Flavianus, patriarch of Constantinople. In that council he embraced the interests of Flavianus, and protested with great firmness and intrepidity against the sentence of his deposition. His conduct on this occasion led him into difficulties, and withdrawing unexpectedly from Ephesus he travelled by night, and in roads not usually frequented, till he thought he had perfectly escaped the power of Dioscorus, who had presided at the council. After this he was raised to the archdeaconry of the Roman church, and from this station he was elevated, in the year 461, to the papal dignity. No sooner was he ordained, than he devoted his principal care to the exten-

sion of the power and authority of the Roman see. In the year 462 he held a council at Rome, at which he enacted such decrees as suited his own views, having met with no opposition from the bishops who were assembled at this time. So submissive were the prelates to the edicts of Hilarius, that he had an opportunity of extending his own authority every day, and making them entirely dependent upon him, by favouring the pretensions sometimes of one and sometimes of another. In the year 465, an opportunity offered of attempting to extend the papal authority over the churches of Spain, and he sent a sub-deacon into that country to see that his pleasure should be carried into effect. In their letters to the pope, the Spanish prelates had been induced, to express the greatest respect for the apostolic see, and to acknowledge the bishop of Rome for the successor of St. Peter, "whose primacy ought to be loved and feared by all." Hilary, in the year 467, violently opposed a design of the new emperor Anthemius, to grant leave to the several sects of Christians to assemble publicly by themselves, to own openly the doctrines which they held, and to serve God in the manner which they believed most agreeable to him. This noble design was suggested to the emperor by one of his favourites, who was friendly to the rights of conscience; but the pope, to whose authority such a measure must ultimately prove fatal, obliged the emperor to relinquish his design, and to take an oath that he would suffer no schismatical assemblies to be held at Rome. Hilary died in the course of the same year, having presided at the head of the church nearly six years. Twelve of his letters may be found in the fourth volume of the "Collect. Concil." Moreri.

HILARY, or *Helier*, *St.* in *Geography*, the principal town in the island of Jersey, consists of several streets. It is protected from the north winds by high grounds, and is open to the sea on the south-west. Between the town and the hills is a tract of fine meadows, watered by a rivulet which descends from the hills, and passing in different channels through the town, is a pleasant and beneficial appendage to the place. Near the centre of the town is a large quadrangular area, surrounded by respectable houses, among which is the court-house, or seat of justice, called La Cohue Royale. St. Hilary is mostly occupied by merchants, shopkeepers, artificers, and dealers in liquor. For the accommodation of persons attending the market, which is kept every Saturday, here are different buildings and places adapted to their respective pursuits. For the dealers in corn there is a building, supported by pillars, and shambles for the butchers. The parochial church is large and commodious, and the service is alternately performed in French and English. Among the monuments it contains, is one to the memory of major Pearson, who was killed in defending the town in Jan. 6, 1781; when a party of French, under baron de Rullicourt, had invaded the island. The garrison and the lieutenant-governor had capitulated, but the major, with a few soldiers, rallied, and, though the former lost his life, he was the cause of saving the island; for the French commander was killed and his soldiers taken prisoners. The harbour is protected by a strong castle or fort, the residence of the governor, or lieutenant-governor of the island. It occupies the whole of a small island, at the distance of about half a mile from the town, and is accessible by a causeway at low-water. On the top of a high rocky hill, near the town, was discovered, in the year 1785, a mass of stones ranged in a circular form, some perpendicular, and others lying horizontally on the former. It was called a Druidical temple, and was completely covered with earth at the time of discovery. General Conway, then governor, had the stones removed to Park Place, in Berkshire, where they were again erected and disposed in their

original form. The circle is 66 feet in circumference, and consists of forty-five stones, some of which are seven feet in height. (See JERSEY.) Gough's Camden, and Fall's Account of Jersey.

HILARY Term, in Law. See TERM.

HILAUI, or UABE, in *Geography*, a town of Peru, in the diocese of La Paz; 25 S.W. of Chicuito.

HILAY, a small island in the Pacific ocean, near the coast of Peru; S. lat. 16° 50'.

HILBERG, a town of Norway, in the diocese of Drontheim; 44 miles W. of Romfald.

HILBURGHAUSEN, a town of Germany, and capital of a principality, belonging to a branch of the house of Saxony, called Saxe-Hilburghausen, separated from Coburg in the year 1672; the town is seated on the Werra, and is the usual residence of the duke; 32 miles E. of Erfurt. N. lat. 50° 19'. E. long. 10° 55'.

HILCONAUR, a town of Hindoostan, in Bednore; 10 miles N.N.E. of Simogu.

HILDANUS, in *Biography*. See WILLIAM FABRICIUS.

HILDEGARDE, a female saint in the Roman calendar, was born in the county of Spanheim, in the Palatinate, in the year 1098. She was at an early period devoted to a religious life, and in process of time was chosen abbess of St. Rupert's Mount, near Bingen, on the Rhine. Here she acquired a character for a high degree of sanctity, and assumed the pretensions and powers of a prophetess, divinely instructed, in dreams and visions, to announce to mankind the will of God. Her claims were well adapted to the dark and superstitious age in which she lived, and occasioned an immense resort to her of credulous persons of all ranks, who consulted her as an oracle, and respected her decisions as the commands of the most high God. Several of the popes, to further their own objects, pretended to credit her miraculous powers, and were among the number of her correspondents, as were the archbishops of Mentz, Cologne, Treves, and other prelates on the continent. To all their letters she returned answers in a mystical and prophetic style. She died in the year 1180, leaving behind her many works which were at the time in high estimation; of these a part of the following are now to be met with in the Biblioth. Patrum: "Scivias, seu Visionum five Revelationum, lib. iii. 1513, fol.;" "Vita S. Roberti Confessoris Bingeniorum Ducis;" "Epistolæ, xxxviii.;" "Quæstiones Variæ in Scrip. Sac.;" and "Expositio Regulæ S. Benedicti." Moreri.

HILDESHEIM, in *Geography*, lately an ecclesiastical state of Germany and a princely bishopric, bounded on the N. by the duchy of Luneburg, on the E. by the duchy of Wolfenbüttele, and the principality of Halberstadt, on the S. by the principality of Calenberg, and on the W. by Calenberg, and extending from E. to W. about 40 miles, and 32 from N. to S. The soil of the greatest part of this state is fit for tillage, and produces corn, flax, hops, and legumes in abundance; but its breed of cattle, horses, sheep, and swine is merely sufficient for the consumption of the inhabitants. The south part is hilly, and is for the most part covered with oak, beech, ash, and birch, and where it is destitute of wood, it has mines of iron. This state contains 12 towns, the chief of which are Hildesheim and Paina, and 248 villages: its principal rivers are the Leine, Innersee, and Ocker. The bishopric was founded by Charlemagne in 822. The inhabitants are partly Lutherans and partly Roman Catholics. In 1803 this bishopric was secularised, and given among the indemnities to the king of Prussia, but in 1807, after the peace of Tilsit, it was transferred to the new kingdom of Westphalia.

HILDESHEIM, formerly one of the Hanse-towns, a city of Westphalia, to whose sovereign it was surrendered in 1807, situated near the Innersee, is an old-fashioned, large, irregular town, divided into the New and Old towns, which were united in 1583. The magistrate, and most of the inhabitants, are Lutherans; the rest are Roman Catholics, who are in possession of the cathedral; but the Protestants have eight churches; 26 miles W.S.W. of Brunswick. N. lat. 52° 12'. E. long. 10°.

HILDESLEY, MARK, in *Biography*, an English prelate, was born at Markiton, in Kent, in 1698, and educated at the Charter House, from whence he was sent to Cambridge, where he was chosen fellow, in the year 1723. Being admitted into holy orders, he was appointed one of the preachers at Whitehall, and was afterwards made chaplain to lords Bolingbroke and Cobham. In 1731 he obtained the living of Hitchin in Herefordshire, and shortly after he was inducted to the living of Holwell in Bedfordshire, where he distinguished himself as a diligent parish priest. On the death of Dr. Wilson, bishop of Sodor and Man, he was appointed his successor, but before his consecration he was created doctor of divinity by archbishop Herring. During the period of seventeen years, in which Dr. Hildesley presided over the diocese of Man, he took every method in his power to promote the interests of the people over whom he was placed. He procured an entire translation of the Old and New Testament to be made into the Manks language. This work had been begun by his predecessor bishop Wilson, who, at his own expence, had printed the gospel of St. Matthew, and had prepared for the press the other evangelists, and the Acts of the Apostles. Dr. Hildesley was enabled to indulge his own liberal spirit in this design, as well by the assistance which he received from many persons of rank and eminence, as by an income which he derived from the mastership of Sherburn hospital, presented to him by the bishop of Durham, and which he held with the bishopric till his death. The worthy prelate had this work so much at heart, that he frequently said, with the feelings of an humble but anxious mind, "he only wished to see it finished, and that then he should be happy, die when he would." On the 28th of November 1772, he received the last part of the translation, when in the presence of an affectionate and congratulating family, he sung with pious emphasis, "Nunc Domine Dimittis!" On the next day he officiated in his own chapel, and preached with unusual energy on the uncertainty of human life, and on the following day he was attacked by a stroke of apoplexy, which soon deprived him of his intellectual powers, and proved fatal to him in a very few days, when he was in the seventy-fourth year of his age. Gen. Biog.

HILELA, or HALEF, in *Geography*, a town of Africa, in the country of Sugulmessa.

HILL, JOSEPH, in *Biography*, was born at Bromley, in Yorkshire, in 1625, and received his college education at St. John's, Cambridge, after which he became fellow of Magdalen college, from whence, on account of his nonconformity, he was ejected in the year 1662. He died pastor of a congregation at Rotterdam in 1707. He published an enlarged edition of Schrevelius's Greek Lexicon, and was author of "Dissertations on the Antiquity of Temples and Churches."

HILL, AARON, an English poet, was born in London in 1685, and was left almost wholly unprovided before he had attained the age of fourteen, by the death of his father. He had naturally an adventurous spirit, and at the age of fifteen took a voyage to Constantinople, where his relation, lord Paget, was ambassador from the English nation. He was received.

received with surprise, but treated with great kindness, and a tutor provided for him, under whose care he travelled through Palestine, Egypt, and various parts of the East. In 1703 he returned to his own country with lord Paget, who would have provided for him, but the death of his lordship deprived him of all hopes from that source. Some time afterwards he travelled for three years with sir W. Wentworth on the tour of Europe. In 1709 he appeared before the public as an author, by "A History of the Ottoman Empire," partly from materials which he collected in that country: in the same year he published a poem in favour of the earl of Peterborough, which introduced him to the favour of that nobleman, and to the notice of the heads of the Tory party. He now became manager of the Drury Lane theatre, for which he wrote his *Elfrid*, or the Fair Incontinent. Upon some difference with the duke of Kent, who was lord chamberlain, Hill threw up his theatrical management, which he had conducted entirely to the satisfaction of the public. He was a man of warm feelings, and a good deal given to projects. He obtained a patent for extracting oil out of beech mast, and a company of subscribers was formed for the purpose of carrying the undertaking into effect. The trial was fairly made, but experience shewed the folly of the scheme, and after three years it was abandoned. He became master of the Opera house, and wrote for it the opera of *Rinaldo*, the first which Handel composed in England. About the year 1718, he published a poem, entitled the Northern Star, or a panegyric on Peter the Great, for which the empress Catherine sent him a gold medal. He died in February 1750, in his sixty-eighth year, and was interred in the cloisters of Westminster Abbey. His character has been given by one of his biographers in a few words; "he was a great schemer as well as a poet; but as in the former character he never acquired riches, so in the latter he never rose above mediocrity." His works were published in four volumes 8vo. after his death. He was a man of active and extensive benevolence: he was kind and affectionate in all the relations of society, and few men have been more beloved. Of his various plays, two of them, *viz.* *Zara* and *Merope*, are still occasionally brought forward with applause; but a dramatic writer and poet cannot claim a high rank, whose best pieces are translations.

HILL, in *Geology*, a less eminence or elevation on the surface of the earth, with respect to height and extent, than a *mountain*; which see.

To find the height of a hill, see the latter part of the article LEVELLING.

On the *structure* of hills it may be proper to observe, that the far greater part of the hills on the surface of the earth are occasioned by the *Excavation* of an adjacent valley, (see that article,) and such hills have the edges of the strata composing them only visible towards or in the slopes of such vallies; another class of hills, and which frequently form ridges of considerable length, is occasioned by the out-crop, *basket*, or *Ending* of rocks and other thick and hard strata, (see that article), and such hills only exhibit the edges of their strata on one side, which is more commonly their W. or N.W. side than any other, and which Mr. A. Aikin calls their *escarpment*, facing of which there usually is a plane or comparatively flat country: to the hills of this class are to be referred the edges of denuded tracts, like those of chalk which surround the wealds of Suffex, Kent, and Surrey, the grit-stone which surrounds the valley of Ashover, or the central lime-hill of brick in Derbyshire, the red marle which surrounds the Ashby-de-la-Zouch coal-field in Derbyshire and Leicestershire, the first grit rock which, like a lengthened horse-shoe, surrounds three sides of the great mi-

neral lime-stone tract of Derbyshire and Staffordshire, &c.: it being extremely rare, that faults or vertical derangements, or what M. De Luc calls angular motions of the strata, has occasioned hills or cliffs. A third class of hills has recently been denominated *Hummocks* by Dr. W. Richardson, (see that article,) and these are composed of piles of strata left in the area of a surrounding denudation, or abruption, just as labourers leave dead-men or buoys in removing tracts of ground, in order for their masters to see and thereby measure the quantity of earth which has been removed: these curious hills are not peculiar to the isolated knowles of low tracts, but after the hummocks of strata which have been removed for miles all around, form the highest points in the district. In the list of hills with the top stratum of each, which Mr. Farey has given in his Report on Derbyshire, (see also *Phil. Mag.* vol. xxxvii. p. 161.) a great number of hummocks are noticed: in this class of hills the top stratum, at least, has its edges on all sides exposed, as otherwise it would belong to one of the former classes, though frequently more edges of strata are to be seen on one side than on the other, particularly if the strata in the hummock have a considerable dip or inclination, and such are called by Mr. Jamefon shield-formed strata. (*Geognosy*, vol. iii. p. 64.) Gravel or other alluvial matters are often heaped upon hills, so as to form caps or hummocks thereon; and sometimes, though very rarely, hills may be found composed wholly of heaps or hummocks of gravel or alluvia. It remains to mention only one other class of hills, which are composed of unstratified masses, like those of Charnwood forest in Leicestershire, and numerous other anomalous masses or nodules in the red-earth or marle of England, the limestone-shale and others of the British series of strata, and of other parts of the world. On the height of British hills, we must refer to the ample lists given in Mr. Jamefon's *Geognosy*, vol. iii. pages 313 to 320; and for the strata which are found on the top of each of about 700 hills in Derbyshire and the adjoining counties, to Farey's Derbyshire Report, vol. i. p. 16.

HILL, in *Geography*, a town of America, in Virginia, on the Rappahannock; 17 miles N.N.W. of Urbanna.

HILL's Bay, a bay in Chesapeake bay. N. lat. 37° 32'. W. long. 76° 20'.

HILL Creek, a river of America, which runs into the Ohio, N. lat. 38° 57'. W. long. 84° 45'.—Also, a river of Maryland, which runs into the Potowmack, N. lat. 39° 40'. W. long. 78° 23'.

HILL and Trough, in *Mining*, are used to denote strata which alternately rise and fall in parallel lines, similar to the surface of ridges and furrows in some ploughed fields, hence called *rigg* and *fur*, or *ridge* and *furrow*, by the colliers, where the floor of their coals assume this shape, which sometimes, though rarely, is the case. The floor of the fuller's-earth mine, at Hogstyend, in Wavendon, Bucks, near Woburn, lies in ridge and furrow. The cause of these and other deviations from planes in the strata, undisturbed by faults, is deserving of great attention from geological observers.

HILLARY, in *Geography*, a town of Sweden, in the province of Smaland; 42 miles S.W. of Wexio.

HILLEBECK, a town of Norway, in the diocese of Aggerhuus; 13 miles S.W. of Christiania.

HILLEBRUN, a town of Sweden, in the province of Gestricia; eight miles N. of Gessle.

HILLEGURRY, a town of Hindoostan, in Bednore; 40 miles S.E. of Simogu.

HILLEL, called *Pollio* by Josephus, in *Biography*, was one of the most eminent men that ever existed among the Jewish doctors, for birth, learning, authority, and posterity. As to his birth, he was by his mother of the seed of David; with

with regard to his learning in the Jewish law and traditions, the Jewish writers, by an unanimous suffrage, assign him the first rank among all the ancient doctors of their nation: as to authority, he occupied the highest station of honour among his people during a succession of 40 years: for so long he filled the chair of president of the Sanhedrim at Jerusalem, with singular reputation and honour, rivalling in wisdom and justice his remote predecessor Simon the Just: and with respect to his posterity, he was succeeded in his high office, as well as in his learning and general celebrity, by his lineal descendants to the tenth generation. His immediate successor was his son Simeon, who is supposed to have been the same who took Christ in his arms, on his being first presented in the temple, and sung over him "Nunc dimittis," (Luke, ii.) After Simeon succeeded Gamaliel his son, who presided in the Sanhedrim, when Peter and the apostles were called before that council (Acts, v. 34.), and was the same at whose feet Paul was bred up in the sect and learning of the Pharisees (Acts, xxii. 3.) He was succeeded by his son Simeon, who perished in the destruction of Jerusalem. At a further distance in this line of descent was R. Judah Hak-kadosh, who is said to have composed the Mishna, and whose name on that account has been held in high veneration among the Jewish people. In the progression of this descent was Hillel the second, who was the compiler of the present calendar of the Jews. Hillel, as we have said, was descended on the side of his mother from the family of David, but by his father he was of the tribe of Benjamin. He was born in Babylon, and at the age of 40 years he came to Jerusalem, where he devoted himself to the study of the law, and attained to such eminence, that after 40 years he became president of the Sanhedrim, being then 80 years old, and continued in that office for 40 years, so that according to this account he lived 120 years: He was the founder of a famous school at Jerusalem, in which he educated above a thousand scholars in the knowledge of the law. Among his disciples, Shammai was the most celebrated, and came nearest to his master in learning of all the Mishnaical doctors: and accordingly he was appointed vice-president of the Sanhedrim. When Herod took possession of Jerusalem, in the first year of his reign, (A.D. 27.) he put to death all the counsellors of the great Sanhedrim, except Pollio and Sameas, *i. e.* Hillel and Shammai. When the latter became vice-president of the former, he did not always concur in opinion with his master. There were many points in which they differed; and this difference produced divisions and quarrels between their scholars, so that two parties subsisted among the Pharisees of that period; and the contention proceeded so far, that several were slain on both sides. At length, however, the school of Hillel prevailed against that of Shammai; the determination, as it is said, having been given for the former by a "Bath Kol," that is, by a voice pretended to have come from heaven, and by this fiction all disturbances among them were appeased. Hillel was of a mild and peaceable temper, but Shammai was of an angry and violent spirit; and hence proceeded most of the disputes and conflicts that occurred between the schools of these two great doctors, of which Shammai being at length weary, consented to terminate them by the fiction we have now mentioned. Prid. Conn. vol. iv.

HILLER, MATTHEW, a learned German divine of the Lutheran persuasion, was born at Stuttgard in the year 1646. He finished his studies at Tubingen, where he took the degree of M. A. in 1669. He obtained some church preferment, and was professor of logic and metaphysics at Tubingen, and in 1692 he was appointed to the Hebrew professorship. After this he was created professor in ordinary of the Greek and oriental languages. He died in 1725, at the age

of 79 years. He was author of "Sciographia Grammaticæ Hebrææ," and various other works.

HILLER, an ingenious and popular composer of comic operas at Leipzig, in the German language, the airs in which were in general favour among the lovers of simplicity and unlearned music, 30 years ago.

This worthy professor is a candid critic and biographer, and has been the careful editor of innumerable curious ancient and modern musical productions.

HILLEROD, in *Geography*, a town of Denmark, in the island of Zealand; burnt down in 1733, and rebuilt in the following year; 14 miles N.N.W. of Copenhagen.

HILLIA, in *Botany*, is a genus named by Jacquin, in honour of the celebrated sir John Hill, M. D. the author of various books on the subject of natural history.—Jacq. Amer. 96. t. 66. Linn. Gen. 175. Schreb. 233. Willd. Sp. Pl. v. 2. 239. Swartz. Obs. Bot. 134. Mart. Mill. Dict. v. 2. Jusl. 202. Lamarck. Illustr. t. 257.—Class and order, *Hexandria Monogynia*. Nat. Ord. *Rubiaceæ*, Jusl.

Gen. Ch. Cal. Perianth superior, of six oblong, acute, erect leaves. Cor. of one petal; tube cylindrical, six-furrowed, very long; limb in six oblong, flat, deep segments. Stam. Filaments six, very short; anthers oblong, erect, within the throat of the corolla. Pist. Germen inferior, oblong, imperfectly hexagonal; style thread-shaped, the length of the tube; stigma capitate. Peric. Capsule oblong, compressed, of two cells. Seeds numerous, very small, pappose, affixed to the linear receptacle.

Ess. Ch. Calyx superior, of six leaves. Corolla six-cleft, very long. Berry inferior, with two cells and many seeds.

Obs. Six little leaves stand under the germen, (within the two larger bractæas,) which Swartz considers as an inferior calyx, but this appears to us so paradoxical that we prefer calling them bractæas.

1. *H. longiflora*. Swartz. Prod. 58. Curt. Bot. Mag. t. 721. Andr. Bot. Repos. t. 145. (*H. parasitica*; Linn. Sp. Pl. 1662.)—"Corolla of six lanceolate, revolute segments. Leaves ovate, acute." A native of moist shrubby places on the mountains of Jamaica, flowering in the summer. The plant is not strictly parasitical, though its roots creep amongst the mossy trunks and branches of old trees. Indeed the name *parasitica* has been supposed to have been bestowed on this plant in allusion to the literary character of the author, after whom the genus is named. It is a *shrub* about a fathom high, branching and smooth, with a shining, cinereous bark. Leaves opposite, spreading, entire, scarcely nervose, without veins; standing on round, smooth, footstalks. Flowers terminal, sessile, solitary, very long, white, and extremely fragrant; outer bractæas two, very large, tube of the corolla three or four inches long; anthers white. Stigma bilid, dark green.

2. *H. tetrandra*. Swartz. Prod. 58. Ind. Occ. v. 1. 630.—"Corolla of four ovate segments. Stamens four. Leaves obovate." Habitat the same as that of the last species. It flowers in August.—A *shrub*, three or four feet high. Roots creeping, and throwing out long fibres. Stem loosely branched, smooth. Leaves opposite, wedge-shaped at the base, somewhat fleshy, of a bright green. Flowers terminal and axillary, sessile, solitary, yellowish-white.

These are the only two species known to us, and indeed the latter is adopted entirely on the authority of Swartz.

HILLIARD, NICHOLAS, in *Biography*, a portrait-painter, who studied and imitated the works of Hans Holbein. He was the son of Nicholas Hilliard, a tradesman at Exeter, and was born in that city in 1547. He had the honour of painting the two rival queens, Elizabeth and Mary, queen of Scotland. He never obtained the solidity

and truth of Holbein in his works; his colour is weaker, and his drawing not so free nor true; yet he wrought with great neatness, enriched his pictures with pearls and jewels, touched with great delicacy and spirit; and the hair and beards of his portraits are painted in fine lines, and not, like Holbein's, soft and broad. He was very much employed by the nobility and gentry, and was admired and highly prized in his time. Enjoying his reputation to the age of 72, he died in 1619.

HILLIGENHAVEN, in *Geography*, a town of the duchy of Holstein, situated on the Baltic; 37 miles N. of Lubeck.

HILLOCK, a name often applied to a small fort of hill, as well as to little risings occasionally met with in sword lands, that are caused by ants and other animals. See **MOUNT**.

HILLOCK-ORE, in *Mining*, is a bad sort of smitham ore, which is dressed from the refuse vein-stuff on the mine-hillocks in Derbyshire, and is sometimes called pippin ore.

HILLOCKS, are the conical heaps of rubbish drawn from the lead-mines, and which usually surround the tops of the shafts; the following mines in Derbyshire have prodigious large hillocks of feaigh, or white vein-stuff, *viz.* Bondog-hole, in Middleton, by Wirksworth; Gang, in Cromford; Gregory, in Overton; Hill-top, in Middleton, by West Hucklow-edge, in Great Hucklow; Moss-rake, in Bradwell; Samuel, on Middleton moor, near Wirksworth, &c.; see Mr. Farey's list of mines, in his Report on Derbyshire, vol. i. The refuse of mines, or hillock-stuff, poisons fowls kept on or near it, by the small particles of lead-ore which they pick up along with their food.

HILLOCKY, a term signifying full of ant-hills.

HILLS, *Lake of the*, in *Geography*, a lake of North America, N. lat. 58° 36', into which the Elk river discharges itself. See **ATHABASCA** and **CHEPEWYAN**.

HILLSBOROUGH, a market and post-town in the county of Down, province of Ulster, Ireland. It is a well built and thriving town, the property of the marquis of Downshire, who has a house in it. There is a magnificent church, built by the late earl of Hillsborough, grand-father of the present marquis, to whose exertions the town was much indebted for its flourishing state. It was formerly a borough which returned two members to parliament; but, like many others, lost its privilege on the Union. The magistrates are a sovereign and deputy sovereign, and the marquis of Downshire, who takes from it his title of earl, is hereditary constable of the fort. Hillsborough is 69½ miles N. by E. from Dublin, and 20 miles S.W. from Belfast. N. lat. 54° 26'. W. long. 6°.

HILLSBOROUGH, an island on the Labrador coast, on a bay at the head of which is Nain. N. lat. 57° 20'. W. long. 61° 20'.—Also, a county of America, in New Hampshire, bounded N. by Grafton county, S. by the state of Massachusetts, W. by Cheshire, and E. by Rockingham county; and containing 43,899 inhabitants, whose chief employment is agriculture. The chief towns are Amherst and Hopkinton.—Also, a post-town in the before-named county, situated on the northern head branches of Contocook river, about eighteen or twenty miles W. of Concord; incorporated in 1772, and containing 1311 inhabitants.—Also, a township in Somerset county, New Jersey, which contained, in 1790, 2201 inhabitants; 15 miles W. of Brunswick.—Also, one of the middle districts of North Carolina, bounded N. by the state of Virginia, S. by Fayetteville district, E. by Halifax, and W. by Salisbury, and comprehending the counties of Granville, Person, Caswell, Orange, Wake, Chat-

ham, and Randolph. It contains 80,012 inhabitants, of whom 22,198 are slaves. The chief town is Hillsborough.—Also, the town last-mentioned, capital of the district of its name, situated in Orange county, on the N. side of Eno river, in an elevated, fertile, and healthy country, and containing about 80 houses, a court-house, a gaol, and an academy; 180 miles W.N.W. of Newbern, and 452 S.W. by S. of Philadelphia.—Also, a post-town in Loudon county, Virginia; 33 miles from Washington.—Also, a river of East Florida, which runs into the gulf of Florida, N. lat. 27° 36'. W. long. 81° 30'.—Also, another river of East Florida, which runs into the gulf of Mexico, N. lat. 28° 10'. W. long. 82° 30'.

HILLSBOROUGH Bay, a bay on the N. coast of the island of Dominica, formed at the mouth of a river of the same name. N. lat. 15° 42'. W. long. 62° 22'.—Also, a bay on the S. coast of the island of St. John, in the gulf of St. Lawrence. N. lat. 46° 10'. W. long. 62° 40'.

HILLSBOROUGH, Cape, a cape on the N.E. coast of New Holland. S. lat. 20° 56'. E. long. 148° 44'.

HILLSDALE, a post-town in Columbia county, New York, containing 4702 inhabitants; 15 miles E. of Hudson city.

HILLTOWN, or **HILTON**, a small town near the centre of Chelster county, Pennsylvania; 28 miles W. of Philadelphia.—Also, a township of Bucks county, in the same state, having 1154 inhabitants.

HILLY LAND, in *Agriculture*, that description of ground which is much raised into hills. This sort of land requires much care and attention in its cultivation, especially in the ploughing, sowing, and working of the more elevated parts. See **HUSBANDRY**, **PLOUGHING**, and **TILLAGE**.

HILO, in *Geography*, a river of Chinese Tartary, which runs into the sea of Japan, N. lat. 42° 54'. E. long. 134° 31'.

HILONGOS, a town on the W. coast of the island of Leyta. N. lat. 10° 25'. E. long. 124° 40'.

HILPOLTSTEIN, a town of Germany, in the territory of Nuremberg; 17 miles N.N.E. of Nuremberg.—Also, a town of Bavaria, in the principality of Neuburg; 27 miles N. of Neuburg.

HILSAH, a town of Hindoostan, in Bahar; 17 miles W. of Bahar. N. lat. 25° 18'. E. long. 85° 28'.

HILSBACH, a town of Germany, in the palatinate of the Rhine; 20 miles E. of Spire.

HILTERS, a town of Germany, in the bishopric of Fulda; 14 miles E. of Fulda.

HILTON, JOHN, in *Biography*, an English musician and publisher of music during the reigns of queen Elizabeth, James, and Charles I.; who, though he furnished a madrigal in the "Triumphs of Oriana," 1601, is found active as a composer and editor fifty years after.

He was a bachelor in music of the university of Cambridge, organist of St Margaret's Westminster, and also clerk of that parish. Though he began to flourish in the latter end of queen Elizabeth's reign, his genius for composition did not much expand, at least publicly, during the next reign; though early in that of Charles I. he published "Fa Las" for three voices, and in 1652, an excellent collection of catches, rounds, and canons, for three and four voices, under the quaint title of "Catch that catch can;" among which there are many by himself, that were deservedly admired by his cotemporaries, and which still afford great pleasure to the lovers of this species of humorous and convivial effusions. He died during the Protectorship, and was

buried

buried in the cloister of Westminster Abbey. He is said to have had an anthem sung in that church, before his body was brought out for interment; but as not only the cathedral service was suppressed during this period, but the liturgy itself and every species of choral music, the fact seems unlikely and ill-founded.

HILTON Head, in *Geography*, an island of S. Carolina; W. and S.W. of which lie Pinckney's, Balls, Dawfuskie's, and some smaller islands; and between these and Hilton Head are Calibogie river and Sound, which form the outlet of May and New rivers.

HILTON's Point, lies in Piscataqua river, New Hampshire, and is the spot where the united streams of Newichawannock and Cochecho rivers meet the western branch, and form the Piscataqua. The course of the river, from thence to the sea being about seven miles, is so rapid, that the water never freezes.

HILUM, in *Botany*, the *Scar* or *Eye*, is that particular part of the seed attached to the seed-vessel, through which nourishment passes for the support of the internal parts. It is extremely visible in the bean, and as all the vessels belonging to the seed are found to meet in this point, and to divaricate from it, they must be intimately connected with the inner surface of the *hilum*. This point is often strongly contrasted in colour with the rest of the seed, as is the case in *Cardiospermum*, *Dolichos*, &c. "In describing the form or various external portions of any seed, the *hilum* is always to be considered as the base. When the seed is quite ripe, the communication through this channel is interrupted: it separates from the parent plant without injury, a scar being formed on each. Yet the *hilum* is so far capable of resuming its former nature, that the juices of the earth are imbibed through it previous to germination."

HIMANGO, in *Geography*, a town of Sweden, in the government of Wafra; 25 miles N.E. of Gamla Karleby.

HIMANTIA, in *Botany*, from *ἵματις*, *ἵματιος*, a *strap* or *thong of leather*. Perfoon. Syn. 703. — *Cryptogamia Fungi*. Nat. Ord. *Fungi*.

Ess. Ch. Creeping, villous, branched and fibrous.

1. *H. domestica*.—Very large, brownish, inclining to violet, soft, cohering into a membranous substance.

This pernicious fungus is found occasionally in houses, insinuating itself, sometimes to the extent of an ell, amongst wrought wood, which it destroys.

2. *H. sulphurea*.—Pale sulphur-coloured, cottony, formed of roundish, entangled, branched fibres.—On the trunks of Fir-trees.

3. *H. candida*.—Parasitic on leaves, tender, white; dilated like a feather at the top.—This is the *Byssus candida* of Hudson, p. 607; *B. tenerrima villosa et elegantissimè ramulosa*; Dill. Musc. 7. t. 1. f. 15, A; frequent among decayed leaves, as those of hawthorn, in mossy dells in winter. It much resembles Mr. Dillwyn's *Confervea nivea*, Syn. n. 59. t. C. Perfoon mentions a larger and more unconnected variety, found on dry branches.

4. *H. lateritia*. (*Clavaria filiformis*; Bulliard. t. 448, f. 1.)—Wavy, somewhat branched, unconnected, red-brown; its summits swelling, whitish.—Found in France, on half-rotten leaves. It is described by Bulliard as sometimes brown, sometimes greyish-brown, but mostly of a brick colour.

5. *H. umbrina*.—Fibrous, tender, villous, dark brown.—Found rarely on dry fir wood. Distinguished from *Rhizomorpha corticalis*.

6. *H. farinacea*.—Red brown, dry, with a whitish powder;

its fibres depressed.—Found on wood and branches of trees. Ludwig.

HEMANTOPUS, *Long-legged Plover*, in *Ornithology*. See *CHARADRIUS Himantopus*.

HIMANTOSIS, in *Surgery*, a relaxation and lengthening of the uvula, which hangs down like a thong of leather, *ἵματις*, from which the word is deduced, having this latter signification.

HIMAS, the same as *Himantosis*.

HIMAEUS, or **IMAEUS**, in *Geography*. See **HIMMALEH**.

HIMERA, in *Ancient Geography*, a town of Sicily, W. of Cephalenis, at the mouth of a river of the same name, now called *Salfo*. It is said to have been founded by a colony of Zanclean, about the year of Rome 104. It was destroyed by the Carthaginians under Hannibal, who took the place by assault, razed it to its foundation, and treated the inhabitants with great cruelty, in the year of Rome 350. Near this city were baths, called "Himeræ Therme."—Also, a town of Libya.

HIMIELA, **LA**, in *Geography*, a town of Spain, in the province of Jaen; 12 miles E. of Ubeda.

HIMMALEH, anciently called *Emodus*, *Himaus*, or *Imaus*, a range of mountains in Asia, extending from the Ganges, above Sirinagur, to Cashmere, and separating Cashmere and the dependencies of Hindooistan from Great Thibet, and Cashgar from Little Thibet. Himmaleh is a Sanscrit word, which signifies "snowy;" and the ancient appellations were probably derived from this term, to which Pliny seems to refer, when he says, "Imäus, incolarum lingua nivofum significante." This ridge of mountains appears to incline, in its northern course, towards the continuation of HINDOO-KHO, and even to join it. Here then, we are to imagine, an extensive tract, of a triangular form, whose base of 200 miles or more, is a line drawn from Cashmere to the eastern confines of Anderab; and whose sides are the continuation of Himmaleh on the E., and that of Hindoo-Kho on the W. This space contains, amongst other countries, those of Little Thibet (or Bakti-istan), and Sakita; the *Bylta* and *Saca* of Ptolemy; as also Kuttore, which answers to the *Comedi* of the same geographer; it also contains the sources of the Indus. From the descriptions of *Little Thibet* and *Kuttore* (which see) we may conclude, that this whole space is mountainous, and that its general level is far elevated above the countries on either side of it. We have no particular information, says major Rennell, respecting the position of the range of mountains which forms the base, or southern side of the triangle; but circumstances lead us to conclude, that the highest of these mountains are far removed from the northern frontier of the provinces, subject to, or commonly regarded as a part of Hindooistan; and that the mountains which properly constitute the boundary of Hindooistan, towards Kuttore (or Caferistan), commence in the parallel of Cashmere, or about 34½ degrees; and extending westward from that celebrated country, separate Puckholi, Sewad, and Bijore on the south, from Caferistan on the north; and advancing from thence to a junction with mount Hindoo-Kho, in the line between Cabul and Anderab, separate Lumghan, which appears to have been the ancient frontier of Cabul, from those districts, which, after the time of Baber, were added to, and have since become a part of the province of Cabul; according to its defined limits in the *Ayin-Acbarée*. On the north of this range, the whole country may be regarded as mountainous; on the south the mountainous tract is confined chiefly to Sewad, Bijore, Teerah, and a part of Puckholi. (Rennell's Mem.) By Col. Crawford's observations, a peak

of Himmaleh, seen from Patna, exceeds 20,000 feet above Nipal, which is probably 5000 feet above the sea.

HIMMUTNAGUR, a town of Bengal; 25 miles N.E. of Purneah.

HIMS, a town of Arabia, in the province of Lachfa, near the Persian gulf; 50 miles N. of Lachfa.

HIMTABADS, a town of Bengal; 25 miles W. of Dinagepour.

HIM-TCHAN, a town of China, of the third rank, in Pe-tche-li; 50 miles S.W. of Pao-ting.

HIN, a Hebrew measure, containing the sixth part of an epha; or one wine gallon and two pints.

HIN, in *Geography*, a city of China, of the second rank, in Chen-si. N. lat. $38^{\circ} 27'$. E. long. $112^{\circ} 22'$.

HINA, a town of Mexico, in the province of Yucatan; 12 miles N. of Campeachy.

HINAGIE ISLANDS, three or four islands in the Indian sea, near the coast of Africa. S. lat. $6^{\circ} 50'$.

HINATOAN, a town on the E. coast of the island of Mindanao. N. lat. $8^{\circ} 12'$. E. long. $126^{\circ} 18'$.

HINCHA, or ST. JEAN DE GOAVA, a town in the island of Hispaniola. N. lat. $19^{\circ} 14'$. W. long. $72^{\circ} 42'$.

HIN-CHANG, a town of China, of the third rank, in Kiang-nan; 25 miles W.N.W. of Cheou.

HINCHINBROKE, CAPE, a cape so called by capt. Cook, on the W. coast of North America, at the entrance into Prince William's sound; within which is an anchoring place, in eight fathoms water, with a clayey bottom, at about a quarter of a mile from the shore. N. lat. $60^{\circ} 15'$. E. long. 213° .

HINCHINBROOK ISLAND, one of the New Hebrides in the Southern Pacific ocean, a little to the north of Sandwich island; about six miles in circumference.—Also, an island in the S.E. part of Prince William's sound, near the W. coast of North America. Its form is triangular; it has a large bay on its N. coast, and is above 48 miles in circumference. N. lat. $60^{\circ} 24'$. E. long. $213^{\circ} 50'$ to $114^{\circ} 24'$.

HINCKLEY, a market town and parish in the hundred of Sparkenhoe, Leicestershire, England, is situated near the borders of Warwickshire. Soon after the conquest it was created a barony, and held by Hugh de Grentesmaifnel, who erected a stately castle and a parish church within this domain. "The ruins of the castle," says Leland, "now longyning to the king, sumtyme to the earl of Leyrcester, be a five miles from Leyrcester, and in the borders of Leyrcester forest; and the boundes of Hinckley be spatious and famous there." Even the earth-works of the castle are now nearly levelled. The ditch and town-wall may however be traced in many places, and also the vestiges of what are called two Roman works: a mount near the river, and the ruins of a bath adjoining the church. A priory was founded here, according to Tanner, by Robert Blanchmaines, and according to Dugdale, by Bossu, the father of Robert; but Mr. Nichols controverts both those claims, and ascribes it to Hugh de Grentesmaifnel, who gave the priory, with the appropriation of the parish church, to the abbey of Lira in Normandy. This priory, like all foreign cells, was often seized by the crown during the wars with France, and was wholly suppressed by Henry V. The parish of Hinckley is of very great extent, and includes Stoke-Golding, Dadlington, Wyken, and The Hyde, which, though distinct villages, (the latter being in the county of Warwick,) are considered as hamlets of Hipckley. The town, under its

original lords, certainly enjoyed the privileges of a borough; but being connected with the house of Lancafter, and taking a decided part on that side in the civil contest; those privileges, whatever their extent might be, became forfeited to the conquering monarch of the house of York. The town is now divided into the borough, and the bond without. The limits of the former were anciently those of the town; which has been extended by the successive addition of four streets. The civil government is vested in the mayor, constables, and headboroughs. The assizes for the county were formerly held here; and here were a gaol and a gallows. The parish church of Hinckley is an ancient edifice; the body of it is probably to be ascribed to the thirteenth century; the west door resembles those of the time of Edward I. or II.; the window immediately over it is supposed to be an improvement made about the reign of Edward IV.; at which period, the building of the steeple, which is 40 yards high, may, with probability, be dated. To the church of Hinckley four chapels were formerly annexed, that of Stoke, (now a parish church,) that of Dadlington, and those of Wyken and Hyde, which have been long since demolished. The ancient chapel of Stoke was taken down at the beginning of the fourteenth century, by sir Robert de Champagne, by whom the present church was then founded. The chapel of Dadlington bears evident marks of antiquity. Besides these places of worship on the establishment, there are in Hinckley five meeting-houses for Presbyterians, Independents, Quakers, Baptists, and Methodists; and a chapel for Roman Catholics. The trade of the town has been greatly augmented by the introduction of the stocking manufacture. The first frame was brought here before the year 1640, by William Iliffe, and is said to have cost him sixty pounds; which must have been a very considerable sum at that time, as the price of a good frame is not more at present than fifteen guineas. With this single frame, which, with the help of an apprentice, he kept constantly working night and day, he gained a comfortable subsistence for his family. The manufacture is now so extensive, that a larger quantity of hose is supposed to be made here than in any other town in England. Nottingham has more frames; but many of those being employed in the finest sorts of silk and cotton, the number of stockings there made is less than at Hinckley, where the frames are generally employed on strong serviceable hose, of a lower price, in cotton, thread, and worsted. The number of frames in the town and adjacent villages is computed at upwards of 1200, which furnish employment for nearly 3000 persons. Hinckley is 100 miles distant from London; has a respectable market on Mondays, and seven annual fairs. The population of the town and its dependencies, which has been progressively increasing, was returned to parliament in the year 1801 as 5686, inhabiting 1059 houses. At a short distance from the town is a spring, called The Holy Well, originally dedicated to the Virgin Mary, and once known by the name of Our Lady's Well. Nichols's History, &c. of Leicestershire.

In 1808, a new organ, which is a beautiful ornamental piece of mechanism, was set up in Hinckley church, by Mr. G. P. England of Tottenham-court road. It was erected by a liberal subscription, and cost 500 guineas. It has 21 stops, and contains 1370 pipes.

HIND, a female itag of the third year. See HUNTING.

HIND-calf, a female hart of the first year. She fawns in April and May. Her flesh is softer than that of a hart, but not so favoury, and is dressed after the same manner. If it be roasted it ought to be larded, dipped in a marinade.

rinade or pickle, and moistened while it is roasting. See HUNTING.

HIND-Hand, in the *Manege*. See HAND.

HINDAK, in *Geography*, a town of Asiatic Turkey, in Natolia; 25 miles S.W. of Boli.

HINDELOOPEN, a sea-port town of Holland, in the department of Friesland, situated on the Zuyder-see. It has no walls, and its harbour is small. It is governed by five burgo-masters, and six eschevins. The inhabitants are chiefly employed in fishing, and building small vessels; 21 miles S.W. of Leuwarden. N. lat. $51^{\circ} 58'$. E. long. $5^{\circ} 23'$.

HINDENI HOMINES, formed from the Saxon *hindene*, a *society* or *company*, anciently signified a society, or class of men.

In the time of our Saxon ancestors, all men were ranked into three classes, or *hindens*; the *lowest*, the *middle*, and the *highest*; and they were valued according to the class they were in; that in case an injury were done by any one, satisfaction might be made according to the value or worth of the man it was done to.

The *lowest* were those who were worth ten pounds, or two hundred shillings; called *wiri ducentini*, or *twybyndemen*, and their wives, *twybyndas*.

The *middle* were valued at six hundred shillings; and were called *sixhyndemen*, and their wives *sixhyndas*.

The *highest* were valued at twelve hundred shillings; and were called *twelvehyndemen*, and their wives the *twelvehyndas*.

HINDENNY, or **ENDRI**, in *Geography*, a river of Hindoostan, which passes by Adoni, and between Bisnagur and the Kitnah, falls into the Toombuddra.

HINDERAA, a town of Norway, in the diocese of Christianfand; 20 miles N. of Stavanger.

HINDERABI, or **ANDARVIA**, an island in the Persian gulf, about three or four miles long, and one broad, separated from the coast of Persia by a channel half a league across, with depth of water from seven to 15 fathoms, and a muddy bottom. N. lat. $26^{\circ} 44'$. E. long. 54° .

HINDERSOE, a small island in the N. part of the gulf of Bothnia. N. lat. $65^{\circ} 38'$. E. long. $22^{\circ} 24'$.

HINDIA, a circar of Hindoostan, in Candeish, bounded N. by Bopal, E. by Kerleh, S. by the Taptee river, and W. by Bejapour. Its chief towns are Hindia, Hurdah, Hussingabad, and Barawnay.—Also, the capital of the fore-mentioned circar, situated on the Nerbudda; six miles E S.E. of Indore. N. lat. $22^{\circ} 35'$. E. long. $77^{\circ} 10'$.

HINDMUND, or **HEERMUND**, a large inland river of Persia, in the province of Segistan, which rises from two widely separated sources, one in the mountains of Gaur, a part of the Hindoo-Kho, and the other far to the south from the mountains of Gabelabad. These streams join not far to the E. of Bolt, whence the river pursues a westerly course, and, according to the account of Otter, very soon divides into many branches, which are lost in the central deserts of Persia. Our geographers, on the contrary, suppose that the Hindmund passes by Zarang into the sea of Zerch. Pinkerton.

HINDOE, an island in the North sea; near the coast of Norway, about 150 miles in circumference. N. lat. $68^{\circ} 36'$.

HINDON, a market-town and borough in the county of Wilts, England, is noted in the annals of parliamentary history, and borough intrigues, for the contested elections that have occurred here. It is deemed an open borough, and the right of election vested in the bailiff and all the inhabit-

ants paying scot and lot; the number of which amounts to about 210. A notorious scene of bribery and corruption, respecting this borough, was developed before a committee of the house of commons in 1775, when it was determined, that out of four candidates, neither of them was duly elected a burges, and that the speaker should not issue his warrant for a new writ. The committee were also of opinion that it would be expedient to dis-franchise the said borough. A bill was brought into parliament for this purpose, but was thrown out on account of some items of informality. A new bill was afterwards prepared, and read twice during the sessions of 1775, but being strongly opposed by counsellors, petitioners, &c. it was not passed that year. A third bill was brought in early in the following sessions, which was also relinquished, in consequence of the harassing opposition made to it. A new writ was then issued, and two members again returned for the borough. It is considered to be the property, and under the influence of the Beckford family, of Fonthill. A particular account of the preceding case, and proceedings, is given in the History of Boroughs, vol. iii. The first time it returned members to parliament was in the 27th year of Henry VI. Hindon consists principally of one long street, built on the declivity of a gentle hill; and is surrounded by part of the Downs. Here are a small weekly market held every Thursday, and two annual fairs. About two miles S. of the town is Fonthill-Abbey, the seat of William Beckford, esq. The building is singular, and its situation, seclusion, and history, are also replete with singularities. On the apex of a lofty hill, nearly the whole of which is covered with plantations, is a large building, assuming the exterior forms and character of a cathedral church. A lofty arched porch, an octagonal tower, with turrets, pinnacles, and gables, are seen rising above the trees, and together constitute a mass which may be seen at the distance of several miles in almost every direction. The interior of this mansion is however more an object of curiosity, and more calculated to excite admiration than the exterior. All the rooms are fitted up in a style imitative of the elaborate carvings, tabernacle work, &c. of the most decorated church architecture; to heighten the effect of which, paintings, gilding, sculpture, and the most costly articles in upholstery, &c. are all brought together. The richest treasures of the fine arts, and literature, are also enshrined within the walls; yet these curiosities and rarities are secluded from public view, and the whole plantations and house are environed by a high wall, surmounted by a cheveaux de frise of iron.

HINDOO-KHO, or *Indian Caucasus* of Alexander, part of a long ridge of mountains in Asia, which forms the N.W. boundary of Cabul, and separates it from Balk and Badakshan. This ridge takes a N.E. direction, between Bamian and Anderab, after which it passes between the E. and N.E., until it appears again at the sources of the Jihon, (or Oxus,) at about 100 miles to the E. of the city of Badakshan; and from thence passing on to the N., it gives rise also to the Sihon (on Jaxartes.) (See HIMMALI.) The city of Cabul is situated near the foot of this mountain. (See CABUL.) Between the mountains of Hindoo-Kho and those of Candahar, the country takes the form of an extensive valley, from Cabul to the borders of Korafan. The river Heermund or Hirmend issues from the north of these mountains, and the waters of Cabul from the east. Hindoo-Kho is continued westward, under the name of *Gaur* (which see), and in position answers to *Paropamisus*.

HINDOOS, the inhabitants of that part of India, denominated.

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nated Hindoostan, who profess the religion of the Brahmins. (See BRACHMANS.) They are called *Gentoos*. For an account of them, see that article. See also the next article.

HINDOOSTAN, a country of Asia, which, by the people of modern Europe, has been understood to mean the tract situated between the rivers Ganges and Indus on the E. and W.; the Thibetian and Tartarian mountains on the N; and the sea on the S. But strictly speaking, the extent of Hindoostan is much more circumscribed; and the name ought to be applied only to that part of the above tract, which lies to the N. of the parallels of 21° or 22°. The Nerbuddah river is, indeed, the reputed southern boundary of Hindoostan, as far as it goes; and the southern frontiers of Bengal and Bahar compose the remainder of it. The countries on the S. of this line, according to the Indian geographers, go under the general name of DECCAN; and comprise nearly one-half of the tract generally known by the name of the Mogul empire. But as the term Hindoostan has been applied in a lax sense to this whole region, it may be necessary to distinguish the northern part of it, by the name of Hindoostan *Proper*. This tract has indeed the Indus, and the mountains of Thibet and Tartary, for its western and northern boundaries; but the Ganges was improperly applied as an eastern boundary, as it intersects in its course some of the richest provinces of the empire; while the Burrampooter, which is much nearer the mark as an eastern boundary, was utterly unknown. In this circumscribed state, the extent of Hindoostan *proper* is about equal to France, Germany, Bohemia, Hungary, Switzerland, Italy, and the Low Countries, collectively; and the Deccan and Peninsula are about equal to the British islands, Spain, and Turkey, in Europe. See DECCAN.

The learned Mr. Wilkins assured major Rennell, that no such words as "Hindoo," or "Hindoostan," are to be found in the Sanscrit dictionary. The people among whom the Sanscrit language was vernacular, styled their country "Bharata." The Hindoos, however, call their country "Medhyama;" and they pretend that it was the portion of "Bharat;" one of the nine brothers, whose father had the dominion of the whole earth. (See Asiatic Researches, vol. i. p. 419.) It is then probable, that the word "Hind" furnished that of India to the Greeks; and the termination *Stan*, signifying country in the Persic, is of more modern date. It has happened, on this as well as similar occasions, that the name "India" has been applied not only to the country originally designed by it, but to others adjacent to and beyond it; for the countries between Hindoostan and China came to be called the *farther* India, or India *extra Gangem*; whereas Hind, or India, properly belonged only to the country of the people called Hindoos; or those of India *intra Gangem*. The name is as ancient as the earliest profane history extant; and this circumstance serves, as well as others, to prove the high antiquity of the Persian language. For other appellations of the Hindoos and Hindoostan, see GENTOO.

HINDOOSTAN, *History of*. Hindoostan, under one appellation or another, has laid claim to very high antiquity; but the earlier period of its history is involved in great obscurity and uncertainty. If we may credit the relations of some historians, the enterprising ambition of Sesostris, supposed king of Egypt about 1485 years B. C., induced him to fit out a fleet of 400 ships in the Arabian gulf, which conquered all the countries stretching along the Erythrean sea to India. At the same time, his army, led by himself, marched through Asia, and subjected to his dominion every

part of it as far as to the banks of the Ganges; and crossing that river, advanced to the eastern ocean. (Diod. Sic. lib. i.) Strabo, however, rejects the accounts of the Indian expedition of Sesostris; and he not only asserts, in the most explicit terms, that this monarch never entered India (lib. xv.), but he ranks what has been related concerning his operations in that country with the fabulous exploits of Bacchus and Hercules. Arrian also concurs in the same sentiments with respect to the exploits of Sesostris in India. (Hist. Ind. c. 5. Arrian, Exped. Alex.) And as Herodotus seems to have derived his information concerning India, not from the Egyptians, but from the Persians, it is probable that in his time there was little intercourse between Egypt and India. Dr. Robertson, in his "Historical Disquisition concerning India," has suggested a variety of considerations which evince the improbability of any such expedition as that of Sesostris into India. It is much more probable, that the Phœnicians, having wrested from the Idumæans some commodious harbours towards the bottom of the Arabian gulf, held from these a regular intercourse with India on the one hand, and with the eastern and southern coasts of Africa on the other. But as the distance from the Arabian gulf to Tyre was considerable, and the conveyance of goods by land tedious and expensive, they took possession of Rhinocolura, the nearest port in the Mediterranean to the Arabic gulf; and thus they were forwarded, partly by land and partly by sea, to Tyre. It is probable that Solomon's profitable traffic included that of India. As his kingdom extended from the Euphrates to the Red sea, and to the borders of the Red sea, (1 Kings, iv. 24.) it opened to him two of the great avenues to the east, by the way of the Red sea, and the Persian gulf. Volney suggests, that the object which Solomon had in view, when he took possession of Pahnrya, was to use it as an emporium of the East India trade, by the way of the Persian gulf, and the course of the Euphrates. This was about 1000 years before our era. Solomon's trade, however, was merely temporary.

The first and most authentic accounts of Hindoostan are those which are given us by Herodotus, who lived 113 years before the expedition of Alexander the Great. From him (l. iv. c. 42. 44.) we learn, that Darius, the son of Hystaspes, explored regions of Asia formerly little known. Having subjected to his dominion many of the countries which stretched S. E. from the Caspian sea towards the river Oxus, his curiosity was excited to acquire a more extensive and accurate knowledge of India, on which they bordered. For this purpose he appointed Scylax of Caryandra to take the command of a squadron fitted out at Caspatyrus, in the country of Pactya (the modern Pehkely), towards the upper part of the navigable course of the river Indus, and to fall down its stream until he should reach the ocean. After employing two years and six months in this expedition, he gave such an account of the populousness, fertility, and high cultivation of that region of India, through which his course lay, as rendered Darius impatient to become master of a country so valuable. This he soon accomplished; and though his conquests in India do not seem to have extended beyond the district watered by the Indus, he levied a tribute which amounted to near a third part of the whole revenue of the Persian monarchy. But neither the voyage of Scylax, nor the conquests of Darius, diffused any general knowledge of India. About 160 years after the reign of Darius Hystaspes, Alexander the Great undertook his expedition into India. Accordingly he set out from Bactria, and crossed that ridge of mountains, which, under various denominations, forms the "Stony Girdle" (to adopt the phrase of oriental geographers)

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geographers) that encircles Asia, and constitutes the northern barrier of India; and thus he discovered the route which was taken by the subsequent invaders of this country, Tamerlane and Nadir Shah. After passing the mountains, he encamped at Alexandria Paropamisana, not far from the mountains denominated the Indian Caucasus by his historians, and now known by the name of *Hindoo Kbo* (which see); and having subdued or conciliated the natives seated on the N.W. bank of the Indus, he crossed the river at Taxila, now Attock. He then marched forward in the direct road towards the Ganges, and the opulent provinces that lay towards the S.E., now comprehended under the general name of Hindoostan. But being opposed on the banks of the Hydaspes by Porus, a powerful monarch of the country, and by some other Indian princes, he was diverted from his route, and obliged to turn more towards the S.W., and to march through one of the richest and best peopled countries of India, now called the *Panjab*, (which see). It was his intention to have pursued his march to the Ganges, and the fertile regions through which that river flowed; but his troops, having already suffered much, unanimously refused to advance farther, and Alexander was obliged to issue orders for marching back to Persia. This memorable transaction took place on the banks of the Hyphasis, which was the utmost limit of Alexander's progress in India; so that he did not traverse the whole extent of the Panjab. Upon his return to the Hydaspes, he found that the officers, with whom he had entrusted the charge, had assembled a numerous fleet, which he declined to sail down the Indus to the ocean, and from its mouth to proceed to the Persian gulf, that a communication by sea might be opened with India and the centre of his dominions. The conduct of this expedition was committed to Nearchus; and he was accompanied down the river by Alexander himself with a very great and magnificent armament. The distance to the ocean was no less than 1000 British miles, and the navigation occupied nine months. Of the extensive region through which they passed, a considerable portion, particularly the Upper Delta, stretching from the capital of the ancient Malli, now Moultan, to Patala, the modern Tatta, is distinguished for its fertility and population. Alexander, having accomplished this object, led his army back by land to Persia; and Nearchus, after a coasting voyage of seven months, conducted the fleet safely up the Persian gulf into the Euphrates. With respect to the general state of India we learn, that in the age of Alexander, though there was not established in it any powerful empire, resembling that which in modern times stretched its dominion from the Indus almost to Cape Comorin, it was even then formed into monarchies of considerable extent. From the memoirs of Alexander's expedition, preserved by Arrian, we also derive the first authentic information concerning the climate, the soil, the productions, and the inhabitants of India; and it is remarkable that the descriptions given by Alexander's officers delineate what we now behold in India, at the distance of 2000 years. The stated change of seasons, now known by the name of "Monsoons," the periodical rains, the swelling of the rivers, and the inundations occasioned by them, and the appearance of the country during their continuance, are particularly mentioned and described. No less accurate are the accounts which they have given of the inhabitants, their delicate and slender form, their dark complexion, their black uncurled hair, their garments of cotton, their living entirely upon vegetable food, their division into separate tribes, or "caits," the members of which never intermarry, the custom of wives burning themselves with their deceased husbands, and many other particulars; in all which they per-

fectly resemble the modern Hindoos. Alexander, however, explored only a small portion of the vast continent of India. His operations did not extend beyond the modern province of Lahore, and the countries on the banks of the Indus, from Moultan to the sea. In India, however, he founded two cities on the banks of the Hydaspes, Nicæa and Bucephalia, and a third on the Acesines, both navigable rivers, which, after uniting their streams, fall into the Indus. By means of these cities he evidently intended to keep open a communication with India, not only by land but by sea; and also by clearing the navigation of the Euphrates and Tigris, he proposed that the valuable commodities of India should be conveyed from the Persian gulf into the interior parts of his Asiatic dominions, while by the Arabian gulf they should be carried to Alexandria and distributed to the rest of the world. Seleucus, one of the successors of Alexander, entertained high ideas of the advantages that might be derived from a commercial intercourse with India, and with a view of securing and extending them, he marched into the country, and advanced considerably beyond the utmost boundary of Alexander's progress. In order to obtain some knowledge of the country and the manner of its inhabitants, he selected Megasthenes, who had accompanied Alexander in his expedition to India, and deputed him as ambassador to Palibothra, the famous capital of the Prasi, situated on the banks of the Ganges. Here he resided several years, and was probably the first European who ever beheld that mighty river, far superior to any of the ancient continent in magnitude, and no less distinguished by the fertility of the countries through which it flows. By this journey and settlement of Megasthenes, the Europeans gained an acquaintance with a large extent of country of which they had not hitherto any knowledge. From his writings the ancients seem to have derived almost all their knowledge of the interior state of India, and the ample accounts of Diodorus Siculus, Strabo, and Arrian, appear manifestly to be a transcript of his words. But Megasthenes, being fond of the marvellous, has unfortunately blended with the truths which he related many extravagant fictions, and diminished our confidence in his other relations. The embassy of Megasthenes to Sandracottus, and another of Daimachus to his son and successor Allitrochidas, are the last transactions of the Syrian monarchs with India, of which we have any account. Nor can we fix with accuracy the time, or describe the manner in which their possessions in India were wrested from them. It is probable that they were obliged to abandon the country soon after the death of Seleucus. When Bactria, originally subject to Seleucus, became an independent state about 69 years after the death of Alexander, the link of the chain that connected India with Syria was broken. The Indian trade was about the same time transferred from Tyre to Alexandria in Egypt, where it flourished under the auspices of the Ptolemies, (see BERENICE,) until Egypt became a Roman province, and was continued on a more extensive scale by the Romans themselves; nor did it forsake Alexandria until the re-discovery of the passage by the Cape of Good Hope. This traffic opened to the Egyptians and Romans a knowledge of the coasts and products of India. It is extraordinary, however, considering how much the detail of the coasts was known to Ptolemy, that the general form of his map should so much deviate from the truth; for he makes the coasts between the Indus and Ganges to project only in a slight curve; whereas, they are known to form the sides of a triangle, whose perpendicular almost equals its base; Cape Comorin being the apex of it. Whoever, says major Rennell, compares the proportional dimensions of India, found

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in Diodorus Siculus, Pliny and Arrian, will find them tolerably just; and will be inclined to think that the worst set of ancient maps of India has travelled down to us; and that Ptolemy, in constructing his map of that part, did not express the ideas of well-informed people of his own time on that subject. Pliny was about 60 years before Ptolemy, and Arrian about 20 years after Ptolemy; their accounts of the dimensions of India were taken from Eratosthenes and Megasthenes. Diodorus says, that India is 32,000 stadia from N. to S., and 28,000 from E. to W.; that is, the breadth is seven-eighths of the length. Arrian gives the measures collected by Eratosthenes and Megasthenes; and says, that India is bounded on the W. by the Indus; on the N. by a continuation of Mount Taurus, called in different parts Paro-pamisus, Emodus, and Himaus; and on the S. by the ocean, which also shuts up the eastern parts of it. Few authors, (says he,) have given us any account of the people that inhabit towards the mouths of the Ganges, where Palibothra is situated. The distance from the mountains, at the head of the Indus, to its mouth, according to Eratosthenes, is 13,000 stadia; and from the said mountains to the eastern sea, the extent is somewhat less; but as a huge tract of land runs out 4000 stadia into the sea, (meaning the peninsula,) it may be reckoned 16,000 stadia; the distance from Palibothra to the western extremity of India, measured along the great road, is 10,000 stadia; and the whole length, (that is, from E. to W.) is 20,000 stadia. Arrian, likewise, gives the measures according to Megasthenes, who reckoned India 22,300 stadia from N. to S., and 16,000 broad from E. to W.; making that the breadth which Eratosthenes reckons the length. Megasthenes's proportion is, on the whole, according to major Rennell, the truest; for India is about 28 degrees of a great circle in length from N. to S.; or from the Indian Caucasus to Cape Comorin; and about 20° in breadth from the Indus to the mouth of the Ganges; and reckoning from the most distant mouth of each river, it will be 22° in breadth. Thus we see that Arrian had as just an idea of the proportional dimensions of India, as we had 40 years ago; for it was then reckoned narrower than the truth by at least two degrees. Pliny gives the measures along the coasts between the mouth of the Ganges and Pattala, (or Tatta,) in the mouth of the Indus at 3320 miles, *i. e.* according to Rennell, Roman miles of 1000 paces. The true measure of these coasts, rejecting the sinuosities, and attending only to the general form, is 40 degrees of a great circle. Allowing, with M. D'Anville, 75 Roman miles to a degree, the above number of miles will amount to 44° instead of 40°, the true measure; but reckoning the pace at four feet 10.02 inches English, there ought to be 78½ Roman miles to a degree, and thus the 3320 Roman miles will be 42°, or within ½ part of the truth. Pliny, therefore, it is evident, knew nearly the form of the peninsula; and Ptolemy was ignorant of its general form, although he knew so much concerning the particulars.

Arrian's geography of India relates chiefly to the northern parts, or those seen by Alexander and Megasthenes; and his catalogue of rivers contains only those that discharge themselves into the Ganges or Indus.

It is unquestionable, that the Hindoo or Braminical religion was universal over Hindoostan and the Deccan, before the time of Alexander's conquest, according to the accounts given us by Herodotus and Arrian. But though there might be an universality of religion, there were many distinct languages; and history, both ancient and modern, assures us that India was divided into a number of kingdoms or states, from the time of Herodotus down to that of Acbar.

There appears, however, to have been, generally, independently of these divisions, a large empire or kingdom, which occupied the principal part of that immense valley or plain, through which the Ganges takes its course; the capital of which has fluctuated between Delhi and Patna, as the limits of the empire have varied. This kingdom was that of the "Prasii," and "Gangaridæ;" in the times of Alexander and Megasthenes; which appears, by the strength of its armies and the number of elephants trained to war, to have been very powerful. This kingdom, as major Rennell supposes, could not have been less in dimensions than France, extending westward to the Panjab country, and including at least part of Bengal; and, as Arrian describes it, its state was rich. The inhabitants were good husbandmen, and excellent soldiers; governed by nobility, and living peaceably; their rulers imposing upon them nothing harsh or unjust.

Major Rennell observes, that there is no known history of Hindoostan (resting on the foundations of Hindoo materials, or records,) extant, before the period of the Mahomedan conquests; for either the Hindoos kept no regular histories, or they were all destroyed, or secluded from common eyes by the Pandits. The travels of Cosmas in the sixth century (see COSMAS), and of the two Mahomedan travellers in the ninth, afford few materials for history; and but little can be gleaned from Marco Paolo, a Venetian nobleman, who crossed the peninsula, and went up the western side of it to Guzerat, in the 13th century. It is chiefly to Persians that we are indebted for that portion of Indian history which we possess. The celebrated Mahomed Ferishta, early in the 17th century, compiled a history of Hindoostan, from various materials, most of which, according to Col. Dow, who translated this history, were collected from Persian authors. But the translator allows, that the most valuable part of this history is that posterior to the first Mahomedan conquests, about the year 1000. The first Mahomedan conqueror, who made any establishments in Hindoostan, was Mahmood, emperor of Ghizni; which see. In the year 1000 he entered Hindoostan; and although in 1008 all the Hindoo princes, from the west of the Ganges to the river Nerbuddah, united against him, for the common defence of their religion, which he wished to extirpate, and which he actually attempted to annihilate by the savage destruction of their temples, they were defeated. After several successful but desolating expeditions, Mahmood died in 1028, possessed of the eastern, and by much the largest part of Persia; as well as, nominally, of all the Indian provinces from the western part of the Ganges to the peninsula of Guzerat, and from the Indus to the mountains of Agimere; but the Panjab was the only part of it that was subjected to regular government under the Mahomedans; as being in the vicinity of the Ghiznian empire. As for the Rajpoots of Agimere, they still preserved their independence, among their rugged mountains, and close vallies; and not only then, but, in a great measure, down to the present time; being, in respect of Hindoostan, what the country of Switzerland is to Europe; but much more extensive and populous. From Mahmood to Aurungzebe the Indian conquerors were contented with the nominal subjection of those hardy tribes; among whom, military enthusiasm, grafted on religious principles, is added to strength and agility of body; and this race is disseminated over a territory equal to half the extent of France, as it existed before the late revolution. It goes under the general name of Rajpootana; and is the original country of the founder of the Mahratta state; whose ruler, about half a century ago, aspired at universal empire in Hindoostan. (See MAHRATTAS.) Upon the death of Mahomed Gori, in 1205, the
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Indian part of the Ghiznian empire, then divided, fell to Cuttub, who founded the Patan or Afghan dynasty in Hindoostan. The Afghans originally inhabited the mountainous tract lying between India and Persia, or the ancient Paropamisus. (For their history, see ARGHANS.) Before Cuttub's elevation to the throne, he had carried his arms under Mahomed Gori, into Agimere and Guzerat. Lahore was, originally, his capital; but with a view of fixing the imperial residence nearer to the centre of his conquests, he removed to Delhi. The emperor Altunsh, who succeeded to the Patan throne in 1210, completed the conquest of the greatest part of Hindoostan proper. He appears to have been the first Mahomedan that made a conquest of Bengal; and it was during this reign (1221) that Gengiz Cawn, among his extensive conquests, accomplished that of the empire of Ghizni; but he left Hindoostan undisturbed. About A. D. 1243, the Moguls, or Munguls, successors of Gengiz, who possessed, or rather over-ran the countries on the N. W. of Hindoostan, made several irruptions into it; but it was not till more than 150 years afterwards, that, under Timur, or Tamerlane, they penetrated into the centre of India. The provinces of Hindoostan were held rather as tributary kingdoms, than as provinces of the same empire; and they seldom failed to revolt when a favourable opportunity offered. Of the state of the internal government of Hindoostan, a judgment may be formed by the punishment inflicted on the Mewatti, or the Banditti tribe, which inhabit the hilly tracts within 25 miles of Delhi. In 1265, 100,000 of these wretches were put to the sword, and a line of forts was constructed along the foot of their hills.

“Rebellions, massacres, and barbarous conquests,” says major Rennell, “make up the history of this fair country (which, to an ordinary observer, seems destined to be the paradise of the world); the immediate effect of the mad ambition of conquering more than can be governed by one man: for the whole empire being portioned out to rapacious governors, who domineering over the governed, until their spirits were sufficiently debased, were at last able to persuade them, that their common interest lay in taking up arms, to render these governors independent.”—“It would appear as if the warm climates, and more especially the open countries, situated within them, were destined to be the seats of despotism; for that the climate creating few wants, and the soil being productive without any great exertion; the inhabitants of it do not possess those energies that, in a cooler climate, prompt mankind to investigate their natural rights, and to assert them. This, however, is a point that I shall not venture to decide on; although I believe it is a fact not to be disputed, that throughout the known parts of the world, despotism prevails most in the warm climates. The Patan, Mogul, and Tartarian conquerors in Hindoostan and China, however hardy at first, have, in a course of ages, sunk into the same state of effeminacy with their subjects; and, in their turn, have, with them, received a new master. Let those who are in the habit of complaining of the severity of a northern climate, reflect, that whatever physical evils it may produce, it matures the great qualities of the mind; and renders its inhabitants pre-eminent among their species; while a flowery poet, or a more flowery historian, is the most eminent production of the tropical regions.” (See CLIMATE.)

The Moguls, having gained acquisitions in the provinces on the W. of the Indus, in consequence of the neglect of the kings of Delhi, at length crossed that river, and invaded the Panjab; and so formidable did they appear to Feroze II., that some tribes of them were permitted to settle in that

country. (A. D. 1292.) In 1293 this emperor projected, at the suggestion of Alla, governor of Gurrarah, an attack upon the Deccan, a tract nearly equal in extent to what he actually possessed in Hindoostan; and which extended from the shores of the Indus to the mouth of the Ganges, and from the northern mountains to Cattack, Sirong, and Agimere; the greatest part of Malwa, with Guzerat and Sindi, being then independent. Alla, incited first by avarice, having succeeded in his object, deposed and murdered the emperor, and took possession of the throne in 1295, beginning his plan of conquest by the reduction of Guzerat; but while he was pursuing his conquests, the watchful and restless Moguls penetrated even to Delhi, and plundered its suburbs. Alla, having extended his victories and possessions, died in 1316. At this period all Hindoostan proper was comprehended in the Patan empire (so called from the dynasty in possession of the throne), and the interior policy is said to be so well regulated, that strangers might travel through the empire in perfect security. Feroze III., who succeeded in 1351, appeared more desirous of improving the empire, after the defection of Bengal and the Deccan, &c. than of extending it by arms. Accordingly, canals and public works, for the improvement of agriculture and of the inland navigation, were his favourite objects during a reign of thirty-seven years. The Moguls made another irruption in 1357; and after the death of Feroze, in 1388, rebellion and civil war, during a course of several years, prepared the empire for foreign subjection, and a minority in the person of Mahmood III., who succeeded in 1393, brought matters to a crisis. In this state of things, Timur, who had already extended his empire over all the Western Asia and Tartary, turned his arms towards Hindoostan in 1398. In the preceding year his grandson Peer Mahomed had prepared the way by reducing the Panjab and Moultan; and before the close of the year, he himself crossed the Indus, and took possession of Delhi without a battle. “This inhuman monster,” says Rennell, “who had credit enough with a poet of the (last) century, to be introduced on the stage, as a hero, possessing great and amiable qualities, obtained in Hindoostan the title of “the destroying prince;” and was truly worthy of it, from the numerous massacres and exterminations executed under his immediate direction.” He was rapid in his destructive movements; he spent little more than five months between the time of his crossing and re-crossing the Indus; and he appears to have paid more attention to seasons than Alexander had done; as Timur chose the fair season for his expedition, whereas Alexander was in the field, in the Panjab, during a whole rainy season. Timur, however, may be said rather to over-run than to subject or conquer: for he did not disturb the order of succession in Hindoostan, but left Mahmood on the throne, reserving to himself the possession of the Panjab country only; which his successors did not long retain. During his life, which ended in 1405, he was prayed for in the mosques of Hindoostan, and the coin was struck in his name; but this might be more the effect of policy in the usurpers of Mahmood's throne than the act of Timur. It does not appear that he carried much treasure with him out of Hindoostan. But Nadir Shah's acquisition of the precious metals, at a later period, was great beyond all ideas of accumulation in Europe; and is only to be accounted for by the influx of those metals from America, during that interval. The death of Mahmood happened in 1413; and with him ended the Patan dynasty, founded by Cuttub in 1205. The throne was then filled by Chizer, a Seid, one of the race of the prophet Mahomed, whose posterity occupied it until the year 1450, when Belloli, an Afghani of

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the tribe of Lodi, took possession of it, on the abdication of Alla II., under whom all Hindoostan fell into separate governments. The son of Belloli recovered a considerable part of the empire, and in 1501 made Agra the royal residence. It was during this reign that the Portuguese first accomplished the passage to India by the Cape of Good Hope. The empire fell again into utter confusion under Ibrahim II. in 1526; and this paved the way for the conquest of Hindoostan by Sultan Baber, a descendant of Tamerlane and of Gengiz Khan; who reigned over a kingdom composed generally of the provinces situated between the Indus and Samarcand. Dispossessed of his dominions by the Uzbeks, he determined to try his fortune in Hindoostan, whose distracted situation flattered his hopes of conquest. From Cabul, where he resided, he undertook his first expedition across the Indus, in 1518. In his fifth expedition (A.D. 1525) he defeated the emperor of Delhi, and put an end to the dynasty of Lodi. Baber reigned only five years in Hindoostan, during which time his chief employment was the reduction of the eastern provinces. His son Humaioon succeeded him in 1530; but though he was a prince of considerable abilities and great virtues, he was driven from his empire in 1541. During his expulsion, his son Acbar was born, whom we may reckon among the greatest of the sovereigns of Hindoostan. The state of this country was so unsettled, that no less than five sovereigns appeared on its throne in the course of nine years. A strong party in Hindoostan invited Humaioon back; and he returned in 1554, but died in the following year. His good character facilitated the accession of his son Acbar, who was about the age of fourteen years, in 1555, when his father died. For a general account of Acbar's character and reign, we shall refer to the biographical article **AKBAR**, and also to the history of Hindoostan by Col. Dow. We shall here add some further particulars. As in the person of Baber, the line of Tamerlane first ascended the throne of Hindoostan, so in that of Acbar, the grandson of Baber, it may be said to have been established. The conquest of their ancestor, about a century and a half before, had no share in effecting the present settlement. Baber was in reality the founder of the Mogul dynasty; and from this event Hindoostan came to be called the "Mogul" empire. The first years of Acbar's reign were employed in the reduction of the revolted provinces from Agimere to Bengal; and his conquests were secured by a proper choice of governors, by wise regulations, by an unlimited toleration of religion, and by a proper attention to the propensities of the people; to all which a long and vigorous reign was peculiarly favourable. The Hindoos still formed the bulk of the people; even in those provinces, which, from their vicinity to the country of the conquerors, had been the most frequently over-run; and experience had taught the Mahomedan conquerors that the passive religion and temper of the Hindoos would, if left to themselves, never disturb the established government. But the Deccan was a stumbling-block to the Mogul emperors, and therefore engaged the particular attention of Acbar. See **DECCAN**.

Acbar, who died in 1605, was succeeded by his son Selim, under the appellation of Jehanguire, who reigned about 22 years. It was in this reign, and in the year 1615, that sir Thomas Roe was sent as the first English ambassador to the emperor of Hindoostan. The Portuguese had by this time acquired considerable settlements in Bengal and Guzerat; but only those in Guzerat, where they also possessed some extent of territory, attracted the notice of the court. Shah Jehan succeeded his father in 1628; and during this reign, *viz.* in 1633, the first serious quarrel happened between the Euro-

peans (Portuguese) and Moguls; and the Portuguese were expelled from Hoogly, on the Ganges. In 1658 the civil wars commenced between the emperor and his sons, as well as between the sons themselves; which terminated in the elevation of Aurungzebe, the third in descent, after he had deposed his father, and murdered or expelled his brethren. For an account of his life and reign, see **AURUNGZEBE**. Aurungzebe was succeeded by his son Mauzum, who took the title of Bahader Shah, and reigned five years. Whilst he was meditating the reduction of the Rajpoot princes of Agimere, who had formed a strong confederacy, his attention was engaged by the Seiks, a new sect of religionists, who appeared in arms in the Lahore province, and ravaged the whole country from thence to the banks of the Jumnah river. These Seiks had silently established themselves along the foot of the eastern mountains during the reign of Shah Jehan. They differ from most religionists in that, like the Hindoos, they are perfectly tolerant in matters of faith, and require only a conformity in certain signs and ceremonies; but, unlike the Hindoos, they admit proselytes. They are now become one of the most potent states in Hindoostan. These were, after much trouble and delay, reduced by the emperor, who then took his residence at Lahore, where he died in 1712. A contest for the empire took place between his four sons; and this ended in the establishment of Jehaunder; but at the end of nine months he was dethroned by Ferozkere, great grandson of Aurungzebe. It was in this reign that the English East India company obtained the famous "Firman," or grant, by which their goods of export and import were exempted from duties, or customs; and this was regarded as the company's "Commercial Charter in India," while they stood in need of protection from the princes of the country. In 1717 Ferozkere was deposed, and blinded by the Seids, who assumed the disposal of the empire and all its concerns. From this time affairs declined very rapidly; and the empire, which had acquired some degree of consistency under the house of Timur, was now about to be dismembered in a degree beyond what it had experienced, even before the era of the Mahomedan conquests. Mahomed Shah, grandson of Bahader Shah, was placed on the throne by the Seids in 1718; but he contrived, by a rebellion and a battle, to get rid of the Seids. About this time, Nizam-al-Muluck, viceroy of the Deccan, was rising into power, and meditating independency; and while he was formidable in the south, the Mahrattas directed their attacks against the middle and northern provinces. Malwa, and the open parts of Agimere, were over-run by them; and their detachments insulted even the capital of the empire. The weak Mahmood had, in the early part of his reign, endeavoured to conciliate them, by paying them a tribute, amounting to one-fourth of the net revenue of the invaded provinces; but this concession only increased their insolence, and terminated in their seizing on the provinces themselves.

In 1738 the Nizam invited Nadir Shah, the usurper of the Persian throne, who was then engaged in the siege of Candahar, to invade Hindoostan, hoping to profit by the confusion which would thus be occasioned. In the following year Nadir Shah entered Hindoostan; but the state of things being at this time uncertain, he offered to evacuate the empire for 50 lacks of rupees (half a million). But the intrigues of the Nizam and his party occasioned the weak emperor to throw himself on the clemency of the invader, who entered Delhi, and demanded 30 millions sterling, by way of ransom. Tumults, massacres, and famine, were the result; 100,000 of the inhabitants were massacred, and 62 millions of plunder were said to be collected. Nadir married

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ried his son to a grand-daughter of Aurungzebe, restored Mahomed Shah to his throne, and returned to Persia, after obtaining the cession of all the countries subject to Hindoostan, lying on the W. of the Indus. The Nizam was thus left in possession of the whole remaining power of the empire, which he sacrificed to his own views in the Deccan, where he established an independent kingdom for himself. The Mahratta invasions of the Carnatic in 1740 and 1741, and the defeat and death of Doast Ally, nabob of Arcot, by their arms, called the Nizam home, who, on his arrival, settled the Carnatic, by placing Anwar O'dien, father of Mahomed Ally, in the nabobship of Arcot, which was then understood to comprehend nearly the present Carnatic. Bengal became independent of Delhi a little before this time (1738), under Aliverdy Cawn; and not long after it was invaded by a vast army of Mahrattas, both from Poonah and Berar, under the sanction of the emperor's name, who, unable to satisfy their demands, sent them to collect for themselves the arrears of revenue since the defection of Aliverdy. About the same time, the Rohillas, a tribe from the mountains that lie between India and Persia, erected an independent state on the E. of the Ganges, and within 80 miles of Delhi. These appeared very strong symptoms of the total dissolution of the empire. Nadir Shah died in 1747; and Abdalla, one of his generals, seized on the eastern part of Persia, and on the bordering provinces of India, that had been ceded by Mahomed Shah to Nadir; and these he formed into a kingdom, known at present by that of Candahar, or the country of the " Abdalli," comprizing nearly the ancient empire of Ghizni. Mahomed Shah, who died this year, after a reign of 29 years, was succeeded by his son, Ahmed Shah. During his reign of six years, the entire division of the empire took place; nothing remaining to the house of Timur except a small territory round Delhi, together with the city itself (now no longer a capital), exposed to repeated depredations, massacres, and famines, by the contests of invaders. The last army that might be reckoned " imperial," was defeated by the Rohillas in 1749, by which their independence was firmly established in the eastern part of the province of Delhi. The Jates, or Jats, a Hindoo tribe under Soorage-Mull, established themselves, and founded a state in the province of Agra. The Deccan and Bengal were usurped by the Nizam and Aliverdy. Oude was seized on by Seidlar Jung, father to the late Sujah Dowlah, and grand-father to the subsequent reigning nabob of Oude, Azuph Dowlah; Allahabad by Mahomed Kooli; Malwa was divided between the Poonah Mahrattas, and several native princes, and Zemindars; Aginere reverted of course to its ancient lords, the Rajpoot princes; and the Mahrattas possessed, in addition to their share of Malwa, the greatest part of Guzerat, Berar, and Orissa, besides their ancient domains in the Deccan. Abdalla, having established his new kingdom very early in this reign, entered Lahore and Moultan (or the Panjab) with a view to the conquest of them. Thus the whole country of Hindoostan proper was in commotion from one extreme to the other, and universal anarchy prevailed. Perhaps, in the annals of the world, it has seldom happened that the bonds of government were so suddenly dissolved, over a portion of country containing at least 60 millions of inhabitants. Upon the death of the Nizam in 1748, contests ensued for the throne of the Deccan, and occasioned the interference of the French and English, as auxiliaries, in the wars that happened in consequence of them, and that lasted till the year 1754. The result enabled the English to establish their security and influence in the Carnatic; and the French, in addition to the solid advantage of getting posses-

sion of the northern circars, valued at half a million sterling, of annual revenue, gained the splendid but uncertain privilege of influencing the councils of the Nizam, by attending his person with their army. The Mogul was now become merely nominal, and the emperors were deprived in a great degree of their importance. Usurpers, however, endeavoured to obtain the sanction of their names, and the coin, throughout the whole tract, known by the name of the Mogul empire, is to this day struck in the name of the nominal emperor. In 1753 the emperor Ahmed was deposed by Gazi, after having reigned about six years.

In the preceding year the Mahrattas had been called in to assist in reducing the Jats, who were in possession of Agra, and became troublesome neighbours to the emperor; and in the present year the Berar Mahrattas established themselves in Orissa, by cession from Aliverdy, nabob of Bengal, who was also compelled, for a short time, to pay them a tribute for Bengal and Bahar, amounting to one-fourth of the clear revenue. This, together with the Mogul's former permission to collect the arrears of revenue due to him, is the foundation of their claims on Pungal and Bahar; and which they have never relinquished, although the times may have been unfavourable to their asserting them. Allunguire II. grandson of Bahader Shah, was placed by Gazi on the nominal throne; but Abdalla, being at this time in possession of Lahore, threatened Delhi, and in 1756 he laid the unfortunate city under heavy contributions. The emperor and his family were now reduced to the lowest state of royalty, alternately soliciting the assistance of Abdalla and of the Mahrattas, and as much in dread of their allies as of their enemies. In 1760 Allunguire was deposed and murdered by Gazi. His son and successor, Shah Aulum, made a fruitless attempt to reduce the Bengal provinces; but his expedition ended in 1761, by surrendering himself to the British, who had taken the field as allies to the nabob of Bengal. In 1759 and 1760 Hindoostan was visited, for the sixth time, by Abdalla, and Delhi was again plundered and almost depopulated. The Mahrattas, in these times of confusion and revolution, were gathering strength; and, possessed of extensive domains and vast armies, they projected the expulsion of Abdalla, and the restoration of the Hindoo government throughout the empire. Thus the principal powers of Hindoostan were arranged into two parties, the Hindoos and Mahomedans; for the Jats joined the Mahrattas; and Sujah Dowlah, with the Rohillas, and other Mahomedan chiefs of less note, joined Abdalla; and a battle ensued in the plains of Carnawl and Panniput. There were said to be 150,000 Mahomedans, and no less than 200,000 Mahrattas. Victory declared for Abdalla, after a very bloody and destructive battle; so that the Mahrattas were compelled to relinquish their pretensions to universal empire in Hindoostan; and from that period (1761) their power has been sensibly on the decline. (See MAHRATTAS.) Abdalla's influence at Delhi was now unlimited; and he determined to place Shah Aulum on the throne of his ancestors. But he dreaded trusting himself in the hands of Abdalla, who set up Jewan Buckt, the son of Shah Aulum, for emperor, exacting an annual tribute; so that in reality Abdalla was emperor, and if he had been disposed to establish himself in Hindoostan, he might probably have begun a new dynasty of emperors in his own person. The territory of the young emperor, and of Nidjib Dowlah his guardian, was merely the northern part of the province of Delhi; and his father, Shah Aulum, the legal emperor, was without territory, and almost without friends. However, the expulsion of the nabob of Benigal, Cossim Ally, by the English, in 1763, by drawing Sujah Dowlah into the quarrel, brought the wandering emperor again into notice; but he had more to hope from the

success of the British arms than those of his patron, Sujah Dowlah; and the uninterrupted success that attended them in 1763, 64, and 65, by the dispersion of the armies of Cossim Ally and of Sujah Dowlah, and by the entire conquest of Oude and Allahabad, left the emperor and Sujah Dowlah no hopes, but from the moderation of the victors. (See BENGAL.) The private distresses of Shah Aulum, the emperor or great mogul, were so pressing, during Mr. Hastings's last journey to Oude (1784) that his son, Jewan Bux, came to solicit assistance from the English. Since the peace of 1782, Madajee Sindia, a Mahratta chief, and the possessor of the principal part of Malwa, has taken the lead at Delhi; and has reduced several places situated within the districts formerly possessed by the Jats, and it may be concluded, that Sindia has in view to extend his conquests on the side of Agimere, and to establish for himself a considerable state or kingdom. The provinces of Agra and Delhi, and their vicinity, are in a wretched state. Having been the seat of continual war for near 50 years; the country is almost depopulated, and most of the lands, of course, lie waste; and the wretched inhabitants dare not provide more than the bare means of subsistence for fear of pillage. Nothing but the natural fertility of the soil, and the mildness of the climate, could have kept up any degree of population, and rendered the sovereignty of it, at this day, worth contending for. In the Mogul empire, many parts of it were 1000 miles distant from the seat of government; and accordingly its history is one continued lesson to kings, not to grasp at too much dominion; and to mankind, to circumscribe the undertakings of their rulers.

Among the new powers that arose on the downfall of the Mogul empire, we ought to mention the French and English. As for the Portuguese, their power had past its meridian before this period; besides, their views being commercial, they wisely chose insular situations, such as Goa, Bombay, Salfette, Diu, &c., and never appear to have possessed any very considerable extent of territory, although they kept on foot a large army of Europeans. The Dutch system was nearly the same; and their prosperity, in a great measure, grew out of the misfortunes of the Portuguese; who, having fallen under the dominion of Spain, became obnoxious as well to the jealousy of rivalship, as to the revenge of the Hollanders. The French power was of short duration, but brilliant while it lasted. It began during the government of M. Dupleix at Pondicherry in 1749, and ended in 1761 by the capture of this their principal settlement. (See CIRCAR.) The French appear to have been the first European power that trained the natives of India to regular discipline, as well as the first who set the example of acquiring territorial possessions, of any great extent, in India; in which they have been so successfully followed by the English. Although the English were firmly and peaceably established in Bengal in 1765 (see BENGAL); yet within two years they were engaged in a very arduous contest in the peninsula, with Hyder Ally, the sovereign of Mysore, leagued with the Nizam or Subah of the Deccan. (See HYDER ALLY.) In 1767, when he had arrived at the height of his fortune, the war between him and the English broke out. Having bought off the Mahrattas, with a considerable sum of money, and the restoration of some places he had taken from them, and detached the Nizam from the English, the war was prosecuted on both sides with vigour. After some sharp battles on the frontiers of the Carnatic and Mysore, a strong detachment of the British army seized on Hyder's province of Coimbatore, a fertile district on the south of Mysore, and commanding a ready way to Hyder's capital, Seringapatam. The war was continued with various success during the years

1767, 1768, and part of 1769; when Hyder, with a strong detachment of troops, chiefly horse, eluding the British army, came within seven miles of Madras, and dictated a peace to the government of that place. This peace was disreputable to the British councils only; since the hands of the commander in chief (general Joseph Smith) were tied up, at the very moment, the most favourable for striking a blow; and when Hyder, fearing the general's approach, could purchase his security no other way than by intimidating government into the measure of laying their commands on the general not to advance; by which measure he might possibly have cut Hyder and his detachment to pieces. The Nizam had, very early in the war, been detached from Hyder's alliance; chiefly by the strong measure of sending a detachment from Bengal into the heart of Golconda; which made him tremble for his capital, Hydrabad. The peace left matters much in the same state as they were before the war; and whatever credit Hyder might have gained by its termination, was done away by the total defeat which he suffered in 1771 from the Mahratta army, within a few miles of his capital; into which he escaped with great difficulty, with a small remnant of his army; afterwards defying the attacks of his numerous enemies, who had neither the skill nor the ordinary requisites for a siege. His revenues and his army were improved by the few years of peace that followed. When the Mahrattas, in 1773, crossed the Ganges to invade the Rohilla country, a brigade of the British army marched to the western frontier of that country, and drove the Mahrattas across the river. For this protection, the Rohilla chiefs had stipulated to pay Sujah Dowlah (the British army acting as his allies) 40 lacks of rupees; but when the service was performed, the payment of the money was evaded. This breach of treaty led to the invasion and conquest of the Rohilla country in the following year, 1774. A considerable tract of land in the Dooab was also conquered from the Jats and other adventurers, by which the boundary of Oude was advanced westward within 25 miles of Agra; north-westward, to the upper part of the navigable course of the Ganges; and south-westward to the Jumnah river. In 1775, on the death of Sujah Dowlah, and the accession of his son Azuph, a new treaty was made with the British government, by which the quantum of the subsidy for the use of the brigade was increased; and the province of Benares, which produced a clear revenue of 240,000*l.* per annum, was ceded to the company. The war with the Poonah Mahrattas occasioned the march of a brigade across the continent to the side of Bombay and Surat in 1778-9. This is said to be the most brilliant epoch of the British military history in India. The brigade, which consisted of less than 7000 men, all native troops, commanded by European officers, marched from the banks of the Jumnah to the western sea, in spite of the Mahrattas, whose empire they traversed almost the whole way. The French war breaking out at this time, and Hyder Ally expecting a communion of interests with the French, broke into the Carnatic, in the autumn of 1780, with 100,000 troops, foot and horse, the best of their kind that had ever been disciplined by a native of India. His success in cutting to pieces colonel Baillie's detachment, and the consequent retreat of the Carnatic army, occasioned a despair of the British interests in that quarter, in the opinion of most people in Europe. Mr. Hallings and sir Eyre Coote thought otherwise; and there was sent from Bengal, to the relief of the Carnatic, a brigade of about 7000 men, with ample supplies of money and provisions. Until these troops and supplies arrived, the British possessed nothing more in the Carnatic than the ground occupied by their camps and fortresses. Under sir Eyre Coote, Hyder

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was successfully combated during two campaigns; at the end of which (October 1782) he found the possession of his object, the Carnatic, at so great a distance, that he appeared to be sincerely desirous of peace. Hyder perceived the necessity of abandoning his ambitious projects; and he would actually have done so, in all probability, if he had not expected a more seasonable and effectual co-operation on the part of the French, with whose assistance he hoped to effect our expulsion in a campaign or two. But he became more jealous of the French than of the English; and if the peace of Paris had left the Carnatic in his hands, instead of Mahomed Ally's, the French would have found the ill effect of his conduct respecting them; for he certainly never intended that they should assume any character in it besides that of merchants. With this disposition of mind, Hyder died soon after, in 1783, and was succeeded by his son Tippoo, who made peace with the English in March 1784, at Mangalore. Tippoo was a prince of inferior abilities, and on a future occasion he expiated his ill-arranged plans by his death, and the partition of his territories in 1799.

The establishment of the British power in the Mogul empire has given a totally different aspect to the political face of that country from that which it would have worn, if no such power had ever existed. It is certain, that the Mahrattas, if they had been left to pursue their plans of conquest, would have acquired Corah and Allahabad in 1772, as well as the Rohilla country in 1773; and afterwards they might have over-run, at their leisure, the province of Oude, and its dependencies. The British interference prevented this. On the other hand, Hyder might have kept possession of the Carnatic. Some may be tempted to ask, whether Hyder might not be as good a sovereign as Mahomed Ally; or the Mahrattas, as Azuph Dowlah? Whatever may be the answers to these questions, says major Rennell, they have no reference to the British politics, which required that Hyder or Tippoo should not possess the Carnatic, in addition to Myfore; and that the Mahrattas should not possess Oude, or Rohilcund.

It has been suggested, that the British might have extended their possessions in Hindoostan, *ad libitum*; lord Clive, however, thought, that the Bengal provinces and the circars, together with a moderate tract of land round Madras, and the island of Salfette, near Bombay, were fully equal to the measure of good policy, and to our powers of keeping possession.

"The state into which Hindoostan has fallen," says Rennell, "since the downfall of the Mogul empire, is materially different from what it was before it was united under the Mahomedan conquerors. It was then parcelled out into several moderate kingdoms, which appear to have preserved a degree of balance among themselves; but now Hindoostan and the Deccan may be said to consist of six (or, since the partition of Tippoo's territories, of five) principal states, which hold, as tributaries, or feudatories, all the inferior ones; of which there are many. The reader will not be at a loss to know, that the two Mahratta states, the Nizam, Tippoo, the Seiks, and the British, are those I mean; for whatever verbal distinctions may be made, a compulsory alliance is at least a dependant, if not, in fact, a tributary situation." Rennell's Memoir, Ed. 3. 1793.

HINDOOSTAN, *Geography of*. This celebrated portion of Asia, long known by the name of the empire of the Great Mogul, because it was then subject to Mogul emperors, successors of Timur, extends from cape Comorin on the south, to the mountains which form the northern boundary of Cashmir; that is, according to the most recent maps, from about the 8th to about the 35th degree of N. lat., being

about 27 degrees, or nearly 1890 British miles. The northern boundary may be farther extended to the *Hindoo Kob*, and mountains running E. and W. on the N. of the province of Kuttore. In breadth this country extends from the river Araba, on the W. of the province of Sindi, to the mountains which separate Bengal from Cassay and the Birman dominions, that is, from about the 66th to the 92d degree of E. long., comprehending 26°, which, in the latitude of 25°, include 1600 British miles. On the N. the boundaries are the mountains already mentioned. On the W., towards Persia, other ranges and deserts form the frontier, till the river Araba terminates the southern separation. The other boundaries are supplied by the Indian ocean and bay of Bengal, where the eastern extremity is limited by the little river Naaf, and those mountains which separate the British possessions from Aracan, Cassay, and Cassar. The northern boundary generally consists of the southern ridges of the Thibetian Alps. On the N.E. of Bengal a similar ridge divides Hindoostan from the small territory of Afam, which seems an independent state, never having formed a part of Hindoostan, of dubious connection with Thibet, and hitherto unsubdued by the Birmans. According to the plan sketched out and pursued by major Rennell, and judiciously adopted by Mr. Pinkerton, we may distribute the various regions of Hindoostan into four general sections: *viz.* the Gangetic, the Sindetic, the central, and the southern.

Gangetic Hindoostan, comprehending the countries on the Ganges, extends from the eastern boundaries of Bengal to the country of Sirhind, an interval of about 1000 British miles. Its greatest breadth, from the sources of the Chumbul, to the mountains of Sewalik, may be about 450 British miles; and the least, on the W. of the province of Bengal, about 230. This section comprises the provinces of Bengal, Bahar, Allahabad, Oude, and Agra; with part of Delhi and Agimere, and of Malwa in the south. The British possessions in this part of Hindoostan, including Bengal, Bahar, Benares, and some other districts to the W., extend about 550 miles in length by 300 in breadth, forming a very powerful kingdom. The native population is computed at 10 or 11 millions of black subjects, exclusive of the English, whose number is not ascertained. Sir William Jones, however, concluded from the actual enumeration of one province, that all the British possessions in Hindoostan included no less than 30 millions of Hindoos; but major Rennell estimates the entire population in the time of Aurungzebe at 60 millions. The revenue of these British provinces is computed at 4,210,000*l.*; and deducting the expence of collection, military and civil charges, &c. being 2,510,000*l.*, the clear revenue will be 1,670,000*l.* (See BENGAL, and CALCUTTA, its chief city.) In the eastern part of the British possessions, the most considerable town is Dacca, which see. (See also MOORSHEDABAD and HOOGLY.) The capital of the province of Bahar is Patna; which see respectively. Benares (which see) is near the western frontier of the British possessions. Beyond the British possessions towards the W. is Allahabad, in a province of the same name, ceded to the English in 1798; and to its S.W. are the diamond mines of Penna, in the small province of Bundelcund, or Bundela, which see. The present capital of Oude is Lucknow; to the N.W., near the northern frontier, is Berilli; and about 50 miles W. from Lucknow is Canoge, which see. (See also AGRA and DELHI.) The farthest city in the south of Gangetic Hindoostan is Oujein; and the river Nerbudda may be considered as its most southern limit. The surrounding states on the E. and N. are the Roshawn of Rennell or Aracan, Cassay or Meckley, Afam, Beotan, Nipal, Gorkah, Kamaoon, and Sirinagur, which see respectively.

Sindetic

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Sindetic Hindoostan, including the countries on the river Sindh, or Indus, extends from the northern mountains of Cashmire, and the Hindoo-Koh, in the north of Cabul, to the mouth of the Indus; being about 900 miles in length, and in medial breadth about 350. Besides part of the provinces of Delhi and Agimere, it contains the extensive province of Moultan, with Lahore, Cashmire, Cabul, the frontier region of Candahar, and that of Sindi at the mouth of the Indus. The chief cities in this extensive region are, Lahore, Cashmire, Cabul, Ghizni, Candahar, Moultan, and Tatta; which see respectively.

Central Hindoostan, comprehending the middle provinces, is chiefly bounded by Gangetic Hindoostan on the N.; and on the W. by the sandy desert, and the ocean. Its southern limit is the river Kiltnah, with its tributary stream the Beemah; and on the E. it is washed by the bay of Bengal. The length from E. to W. *i. e.* from Jigat point to cape Palmiras is little less than 1200 miles, and the medial breadth is about 400. In this section are comprehended the province of Orissa, with part of Golconda, Berar, Dowlatabad, Candeish, and Guzerat, besides other districts of inferior name; and on the eastern shore are the British provinces of the Circars. The chief cities are Ahmedabad, taken by the English in 1780, and ceded to the Mahrattas in 1783, Cambay, Surat, Bombay, Burhampour, Ellickpour, Nagpour, Aurungabad, and Dowlatabad.

Southern Hindoostan, called the Deccan, or South, and also Carnada or the Carnatic, is bounded by the river Kiltnah, and its most northern subsidiary streams flowing into the Beehmah, and may be considered as extending from the latitude of Bombay to the southern point of cape Comorin, about 830 miles in length, and about 350 of medial breadth. (See DECCAN.) In this division may also be included the island of Ceylon, the coasts of which are now possessed by the English, who have supplanted the Dutch; while the native princes retain the extensive inland parts. In addition to the district round Madras, the British power was extended in 1792 and 1799, over wide provinces in the south and west of Mysore; and Seringapatam, the capital, is also in our possession; so that our territories in this portion of Hindoostan only yield in extent and consequence to those on the Ganges. The chief cities and towns in this division are Seringapatam, the most important; Salem and Attore on the E.; Dindigul, Coimbatore, and Palicaud, on the S.; and on the W. coast Paniany, Ferokabad, Calicut, now nearly deserted, Tellicherry, and Mangalore; and on the N. Carwar, within 40 miles of the Portuguese settlement of Goa, while on the S. we approach within a like distance of Cochin. In the Carnatic we have Madras, and not far from the western frontier of our settlement at Madras is Arcot, esteemed the capital of the Carnatic. To the south of these British possessions are Tranquebar, a Danish settlement in the kingdom of Tanjore and Pondicherry, formerly the principal settlement of the French. On the western coast, or that of Malabar, stands Cochin, which see. To the north of the British territories are Goa, Poona, Vissapour, Hydrabad, Calberga, &c.

The three leading powers of Hindoostan are the British, the Mahrattas, and the Nizam; to which may be added on the W., or Sindetic division, the Seiks, and Zemaun Shah, or whatever prince holds the eastern division of Persia. The following table, extracted by Mr. Pinkerton, with a few alterations, from major Rennell's Memoir, will convey a satisfactory view of the state of territory, and the ruling powers in Hindoostan.

I. British Possessions.

1. Bengal and Bahar, with the Zemindary of Benares.

2. Northern Circars, including Guntoor.
3. Barra-Mahal, and Dindigul.
4. Jaghire in the Carnatic.
5. The Calicut, Palicaud, and Coorga countries.
6. Coimbatore, Canara, and other districts acquired 1799.

II. British Allies.

1. Azuph Dowlah, Oude.
2. Mahomed Ally, Carnatic.
3. Travancore, and Cochin.

III. Mahratta States.

Poona Mahrattas.

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| | Tributaries. |
| 1. Malwa. | 1. Rajah of Jyenagur. |
| 2. Candeish. | 2. ——— Joodpour. |
| 3. Part of Amednagur, or } Dowlatabad. | 3. ——— Oudipour. |
| 4. Vissapour. | 4. ——— Narwah. |
| 5. Part of Guzerat. | 5. ——— Gohud. |
| 6. ——— Agra. | 6. Part of Bundelcund. |
| 7. ——— Agimere. | 7. Mahomed Hyat, Bo- paltol. |
| 8. Allahabad. | 8. Futy Sing, Amedabad. |
| 9. Sanore, Bancapour, Darwar, &c. situated in the Dooab, or country between the Kiltnah and Toombuddra rivers. | 9. Gurry Mundella, &c. |

Berar Mahrattas.

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|------------|------------|
| | Tributary. |
| 1. Berar. | |
| 2. Orissa. | Bambajeca. |

IV. Nizam Ali, Soubah of the Deccan.

1. Golconda.
2. Aurungabad.
3. Beder.
4. Part of Berar.
5. ——— Adoni, Rachore, and Canoul.
6. Cuddapali, Comban, and Gandicotta.
7. Part of Gooty, Adoni, and Canoul.
8. Part of the Dooab.
9. Other districts acquired in 1799.

V. Seiks.

Lahore, Moultan, and the western parts of Delhi.

As the other great power chiefly extends over Persia, and may be regarded as foreign, it only remains to mention the small states.

1. Successors of Zabeda Cawn. Schaurunpour.
2. Jats.
3. Pattan Rohillas, Furruckabad, Rohilcund.
4. Adjig Sing, Rewah, &c.
5. Bundelcund, or Bundela.
6. Little Ballogittan.

To which may now be added the Raja of Mysore.

Before the fall of Tippoo in 1799, the British possessions were supposed to contain 197,496 square British miles, being about 60,000 more than are comprised in the united kingdoms of Great Britain and Ireland; and the number of inhabitants was computed at 10 millions. The acquisition in 1799 probably adds 15,000 square miles, and the population subject to Great Britain is supposed to be 12 or 14,000,000. The net revenue exceeded 3 millions before the cessions by Tippoo in 1792, computed at 400,000l.; while those in 1799 do not appear much to exceed half that sum. For an account of the Mahrattas, Seiks, Jats, and Afghans, see these articles respectively.

The original population of this extensive country may be generally considered as indigenous, yet it presents considerable varieties;

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varieties; those in the northern parts being fairer, and those in the southern almost or wholly black, but without the negro wool or features. The tinge, however, of the women and superior classes is deep olive, with sometimes a slight and agreeable mixture of the ruddy, and the Hindoo form and features may be said to approach the Persian or European standard.

Of the mythology and religion of the Hindoos we have already given an account under the article GENTOOS. (See also BRACHMANS and CAST.) The governments are as various as the several states. Although the Bramins are the most dignified cast, the sovereignty has been abandoned to the military cast, and the monarch was presumed to be proprietor of all the lands, except those belonging to the church. The "Ryots" held their possessions by lease at a fixed rate, and considered them as perpetual. The "Zemindars" were, as some conceive, only collectors of the royal rents from the Ryots, or farmers; but, as others imagine, they were learned gentlemen, who had an hereditary right to these rents, upon paying a settled proportion to the crown. The laws are blended intimately with their religion; and an account of them may be found in the code published by Mr. Halhed, and referred to under GENTOOS.

The population of this extensive part of Asia consists of Hindoos blended with Persians, Greeks of Bactriana, ancient Scythians, Mahometans of various origins, Patans or Afghans from the mountains towards Persia, Moguls, including Tartars and Mahometan tribes from the east of the Caspian, who, with the Arabs and Persians, are generally called Moors; and it is supposed to amount to 60 millions, of which number the British possessions may probably contain a quarter. In the time of Aurungzebe the general revenues of Hindoostan were computed at 32 millions sterling, equal, allowing for the comparative price of the productions of the country, to 160 millions sterling in modern England. The manners and customs of the Hindoos are very much incorporated with their religion, and are universally similar, with some few exceptions in mountainous and other peculiar districts. Their houses and dresses are of the most simple kind, and to a Bramin nudity is no reproach. Their amusements consist of religious processions, and though dancing girls are numerous, theatrical exhibitions are less common than in countries farther to the east. The general ancient language of Hindoostan is believed to have been the *Sanferit*; which see: but of this there are various dialects in different provinces. Of their literature we have had many confused and contradictory reports; but their most important books are the Vedas. (See BRACHMANS.) Dr. Robertson alleges several considerations in proof of the ancient and high civilization of the Hindoos; but against his arguments to this purpose others have advanced many objections. (See CAST.) The arguments of M. Bailly and others for the antiquity of the Hindoo astronomy have been attacked with great force by Mr. Bentley, in a learned dissertation published in the sixth volume of the Asiatic Researches, 1799: and the result appears to be, that the system, so highly extolled and traced to remote antiquity, cannot be of a greater age than 731 years; or that it was composed about A. D. 1068.

The chief university in the north is that of Benares; and in the Deccan, the academy of Tricour, on the Malabar coast, is also in great repute: and at Cangiburam, in Carnate, we are told, there is still a celebrated Brahman school, which, according to the testimony of Ptolemy, existed in the first century of the Christian era, and its members, it is said, are equal in celebrity to the Brahmins of Benares. The manufactures of Hindoostan have been celebrated from a remote antiquity, particularly those of muslins and other cotton fabrics. Piece goods, as we call them,

are mentioned by the authors of the Periplus, and other ancient writers, who commend both the manufacture and the beautiful colours of the dyes. In the time of Strabo, the Hindoos were famous for elegant works in metals and ivory. Hindoostan, however, is not celebrated at this day for any manufacture, except those of muslins and calicoes; the other exports consisting of diamonds, raw silks, with a few wrought silks, spices, drugs, &c.

Painting and sculpture are in their infancy; and yet the temples are majestic and solemn. Hindoostan has, in all ages, been chiefly famed for its native products; its diamonds, and some other precious stones, its spices, aromatics, and drugs; rice also, sugar, and many articles of luxury, are products of Hindoostan.

The climate and seasons are considerably diversified by difference of latitude and local situation; nevertheless, through the wide regions of Hindoostan there is some similarity of climate. (See BENGAL.) Although in Thibet the winter nearly corresponds with that of Switzerland, and other parts of Europe, in the whole extent of Hindoostan, except in Cashmire, there can hardly be said to be a variety of winter, except the thick fogs of our November; and excessive rains, or excessive heats, form the chief varieties of the year. The aspect of the country is very much diversified; but there are no mountains of any very great height; the Gauts (which see) not being estimated at above 3000 feet. The vast extent of Hindoostan consists chiefly of large plains, fertilized by numerous rivers and streams, and interspersed with a few ranges of hills. The periodical rains and intense heats produce a luxuriance of vegetation, almost unknown to any other country in the globe; and the variety and richness of the vegetable creation delight the eye of every spectator. The soil in some places is so excellent, that it consists of black vegetable mould to the depth of six feet. Rice is the chief grain, which is industriously watered on the dry sandy lands of the coast of Coromandel. Maize and the sugar-canes and cotton are also much cultivated. But the implements of husbandry are in general so imperfect, that they owe to the fertility of the land what they want either in skill or diligence of agricultural operations.

The two principal rivers of Hindoostan are the Ganges and Burrampooter, which see; the chief tributary streams of the Ganges are the Gagra or Sarjoo, the Jumnah, which receives the Chumbul, Betwa, and several others, and the Soan. The Indus, or Sindeh, with its confluent streams, is also a principal object. Its tributary streams are very numerous; see SINDEH. The chief rivers of the central part of Hindoostan are the Pudda, Nerbudda, and Taptee, on the W.; the Subanreeka, the Godaveri, &c. In the southern part of Hindoostan are the Kistnah, Pennar, Paliar, and Caveri. This country has few lakes; those of Colair, Chilka, Pullicat are mentioned by Rennell. The mountains, discriminated by their modern names, are the Tipera, Garro, Himmaleh, Hindoo-Koh, Gauts, &c. Hindoostan abounds with forests, some of which are near the mouths of the Ganges, &c. others in the rude unexplored regions on the W. of the Circars. On the east of the Indus is a sandy desert, between 4 and 500 miles long, and from 60 to 150 miles broad; it is styled that of Agimere, and was known to Herodotus. The botanical productions of this fertile country are too numerous and various to be recited. Its cattle are frequently of a large size, with a hunch on the shoulders; and its sheep are covered with hair instead of wool, except in the most northern parts. Antelopes, camels, elephants, apes and monkeys, dogs, wild boars, bears, wolves, foxes, jackals, hyenas, leopards, panthers, lynxes, and many other quadrupeds are found in this country. It would be endless

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to enumerate the birds, fishes, and insects that abound in Hindoostan. We shall conclude this article with mentioning some of its most celebrated mines. Those of the diamond are near Viliapour and Golconda, at Raolconda, in a district on the river Mahanada, S. of Sumboulpour, Gandicotta on the river Pennar, and Penna in the territory of Bundelcund, about 60 miles S. of the river Jumnah, which flows into the Ganges. (See DIAMOND.) Robertson's India. Raynal's Indies, vol. i. Rennell's Memoir, passim. Pinkerton's Geography, vol. ii.

HINDOOSTANEE, the vernacular language of the Hindoos. It is also frequently denominated *Hindu*, *Oordoo*, and *Rekhtu*. It is compounded of Shanscrit, Persian, and Arabic. The first of these was the great original language of India, and to it may be traced such terms in the provincial dialects as are of truly Indian original: and such words as bear no relation to the Shanscrit roots are either Persian or Arabic.

The Persian was carried into India by the Mogul conquerors, and being the language of the court, naturally gained a footing in the law and in the revenues. It has also for some centuries been the common medium of negotiation between the several states of Hindoostan; and from thence became an almost indispensable qualification for those who were engaged in the management of Indian affairs. The Persian is still used by all the Mogul officers of government, in their several departments of accounts and correspondence. Thus the Hindoostanee received a great influx of Persian terms, and many peculiarities of the Persian idiom. The original language of the Hindoos, from a similar cause, became debased by a copious mixture with Arabic. When the Mahometan invaders first settled in India, from the necessity of having some medium of communication with the natives, whom they had conquered, they applied themselves to the study of the Hindoostanee dialect. The knowledge of the Shanscrit was impracticable, from the invincible aversion of the Gentoos to teach to foreigners, and to conquerors, the use of their own tongue. The latter, therefore, had no resource but to introduce, as far as they could, their own language. New adventurers, continually arriving, kept up a constant influx of exotic words, and the heterogeneous mass gradually increased its stock, as conquest or policy extended the boundaries of its circulation. But these alterations affected words only. The grammatical principles of the original Hindoostanee, and the ancient forms of conjugation and inflexion remained the same; and whilst the primitive substantives were excluded, or exchanged, the verbs maintained both their inflexions and their regimen. The Shanscrit, indeed, has a dual number, both to nouns and verbs, the Hindoostanee to neither. Verbs in Shanscrit have the same form for both the masculine and feminine genders. The Hindoostanee verbs are distinguished by different terminations for the different sexes, like those of the Arabic. These are the capital outlines of dissimilarity between the Shanscrit and the Hindoostanee; but in the original appropriation of particular words to particular senses, in the idiomatic turns of expression, and complexion of speech, we may observe the strongest family likeness. The characters also, peculiar to the Hindoostanee, are exactly the same with those of the Shanscrit, but of a ruder shape, yet still exhibiting a more accurate resemblance than is found in many of the Greek letters in inscriptions of different eras.

From the above statement it is obvious, that the primitive Hindoostanee tongue has by no means preserved its purity or its universality to the present age: for the modern inhabitants of India vary almost as much in language as in religion: and at present those persons are thought to speak this com-

pound idiom with the most elegance, who mix with rare Indian verbs the greatest number of Persian and Arabic nouns. Such of the Hindoos as have been connected with the Mussulman courts, or admitted to any offices under that government, have generally complimented their masters by a compliance with these literary innovations. But the Bramins, and all other well-educated Gentoos; whose ambition has not overpowered their principles, still adhere with a certain conscientious tenacity to their primeval tongue.

As the intercourse and communication of the Mussulmen with the natives of India was greater or less, according to certain circumstances and situation, the Hindoostanee naturally varied considerably with respect to the prevalence of one or other of the three great languages composing it. This circumstance, says Mr. Bailey in his Collegiate *Thesis* on the importance of this language, will sanction a division of it into three distinct dialects, namely, the pristine or country; the middle or familiar; and the learned or court dialect; each of which are respectively useful in different districts. In the first or pristine dialect, there is a smaller admixture of foreign words. Hence this is more nearly related to the original dialect of the country. In the second, or familiar dialect, the number of foreign words bears nearly an equal proportion to the original ones. In the third, or court dialect, Arabic and Persian words are by far the most numerous.

In recommending the study of this language, the above-mentioned author asserts that to the merchant, the traveller, the civil and military officer, the philosopher and physician, in short, to every one who carries on concerns of any moment in India, the Hindoostanee language is more generally necessary and advantageous than any other. For this reason it is of late become an object of indispensable attainment to all those young gentlemen who are destined to engage in Indian affairs. In the whole of the vast country of Hindoostan, scarcely any Mussulman will be found who does not understand and speak the Hindoostanee. Every Hindoo also, of any distinction, or who has the least connection either with the Mussulmen or the British government, is acquainted more or less with this language. It is moreover the general medium by which foreigners, such as the Portuguese, Dutch, Danes, French, Arabs, Turks, Americans, Persians, Moguls, and Chinese communicate their ideas to each other. In almost, too, all the armies of India this appears to be the language universally used: though many of the individuals composing them must be better acquainted with the dialects peculiar to their respective districts. Finally, from Cape Comorin to Cabul, a country about 2000 miles in length, and 1400 in breadth within the Ganges, few persons will be found in any large villages or towns, which have been conquered or much frequented by Mussulmen, who are not sufficiently conversant in the Hindoostanee, and in many places beyond the Ganges this language is current and familiar.

The dialect called the *Moors*, is that mixed species of Hindoostanee which owed its existence to the Mahometan conquests. In this idiom several elegant poems and tales have been composed by learned Persian and Mogul authors, and are still extant in the libraries of the curious. These are always written in the Persian hand; which is by no means calculated for expressing the sound either of the Hindoostanee vowels or nasal consonants. The Mahometans of the lower rank have a few books on religious subjects in this language and in the *Naagore* characters; which are also used by some of them in their petty accounts. Europeans, on their arrival in India, reduced to a necessary intercourse with Mahometan servants or Sepoys, habitually acquire
from

from them this idiom in that imperfect and confused state, which is the consequence of the mental condition of their instructors. Yet this curious system of study hath produced more than one attempt to a grammar and vocabulary.

These attempts are unworthy of notice; but the labours of Dr. Gilchrist deserve particular attention. His English and Hindoostanee dictionary, which was intended to be followed by another part in Hindoostanee and English, is a highly valued production, and his grammar, as containing a copious detail of the language with numerous specimens of Indian poetry, is a performance not less valuable and useful to the oriental student, though it cannot boast the simplicity, the taste, the philosophical acuteness, and the extensive acquaintance with the classical languages which distinguish the Persian grammar of sir W. Jones, or Mr. Halhed's grammar of the Bengalese. But Dr. Gilchrist's chief merits consist in the attempt which he has made to teach the Hindoostanee language in European characters. To effect this purpose with success, required great skill and diligence, as many European letters correspond as little in sound, as they do in form, to those of Asia. There are two general modes, (says sir W. Jones, in his Dissertation on the Orthography of Asiatic Words,) of exhibiting Asiatic words in our own letters; they are founded on principles nearly opposite, but each of them has its advantages, and each has been recommended by respectable authorities. The first professes to regard chiefly the pronunciation of the words intended to be expressed, and this method, as far as it can be pursued, is unquestionably useful; but new sounds are very inadequately presented to a sense not formed to receive them; and the reader must, in the end, be left to pronounce many letters and syllables precariously; besides that, by this mode of orthography all grammatical analogy is destroyed, simple sounds are represented by double characters, vowels of one denomination stand for those of another; and possibly with all our labour we perpetuate a provincial or inelegant pronunciation. The second system of Asiatic orthography consists in scrupulously rendering letter for letter without any particular care to preserve the pronunciation. The first of these methods had an advocate in major Davy, an elegant Persian scholar, and a member of the Asiatic society; the second found two able supporters in Mr. Halhed and Dr. Wilkins, to whom sir W. Jones bears the honourable testimony of having done more towards promoting Indian literature, than Europe or India can ever sufficiently acknowledge. The former justly remarks that the two greatest defects in the orthography of any language, are the application of the same letter to several different sounds, and of different letters to the same sound, and these defects he truly pronounces to be so common in English that he was exceedingly embarrassed in the choice of letters to express the sound of the Bengal vowels, and was at last by no means satisfied with his own selection; Dr. Gilchrist has adopted neither of the above modes, but embraced a scheme which affords the advantages of both, without the inconveniences peculiar to either. His plan is to define the sound of the European letters, and then to use them in every word as representatives of the Hindoostanee elements, without ever the slightest variation. The Indian letters seldom experience any change of pronunciation, and it was only necessary to adjust their sound to our characters, in order to express them with corresponding uniformity. By this plan he has paid due attention to the pronunciation of each word, and of its elements. His system is peculiar to himself, and is likely to be rejected by those who cannot pay to it the time and attention necessary to perceive its excellence, and to reap its advantages. The scholar who can make this sacrifice, will readily acknowledge the usefulness of Dr. Gilchrist's

system, though he cannot fail to lament the pedantry and want of simplicity which disfigures his works.

HINDOWN, in *Geography*, a town of Hindoostan, in the Subah of Agra; 25 miles N. of Kerowly. This has been a large city, and contains extensive buildings, but, in consequence of the depredations of the Mahrattas, is now thinly inhabited.

HINE, or **HIND**, in the *Saxon Language*, signifies a servant, or one of the family; but it is now taken in a more restrictive sense, for a servant at husbandry; and the matter hinc is he that oversees the rest.

HING, in *Geography*, a town of China, of the second rank, in the province of Kiang-nan. N. lat. $32^{\circ} 35'$. E. long. $305 26'$.

HINGES, in *Building*, those necessary iron ligaments, by means whereof doors, lids, folds of tables, &c. make their motion, whether of opening, shutting, or folding.

The species of hinges are many, viz. bed, box, butts, casement; casting, chest, coach, desk, dove-tails, esses, folding, garnets, weighty, side, side with rising joints, side with squares, screw, scuttle, shutter trunk of sundry sorts, and hook and eye hinges.

HINGHAM, in *Geography*, is a small town and parish in the hundred of Forchoe, in the county of Norfolk, England, 96 miles distant from London, and contains 179 houses, and 1203 inhabitants. It was anciently part of the possessions of the Marshals, afterwards earls of Pembroke; from whom it came to the Morleys, and thence to the Wodehouses, in which family it is at present vested. The church, which is a handsome structure, with a large and lofty tower, was rebuilt by Remigius de Hetherfete, the rector, aided by the munificence of the patron, John le Marshall, in the reign of Edward III. Several chapels and numerous images decorated the interior prior to the Reformation. In the church were held seven guilds, each having a stipendiary chaplain serving at the respective altars, constituting a choir. On the north side of the chancel is a noble canopied monument, reaching from the floor to the roof, richly decorated with stone imagery and tracery: many of the brasses are gone, but from the arms remaining it appears to have been erected to the memory of Thomas lord Morley, who died in the reign of Henry VI. Hingham has a weekly market on Saturdays, and three annual fairs. Blomesfield's History and Antiquities of Norfolk.

HINGHAM, a post-town of America, in Suffolk county, Massachusetts, situated on a small bay, S. from Boston bay. It contains a number of houses, compactly built, two congregational churches, and a well endowed school. It is 19 miles S.E. of Boston. The township is about four miles square, including two parishes, incorporated in 1635, and containing 2112 inhabitants.

HING-HOA, a city of China, of the first class, in the province of Fo-kien, near the sea-coast. It is adorned with several triumphal arches and majestic public buildings. The adjacent country furnishes rice and silk in abundance. N. lat. $25^{\circ} 28'$. E. long. $118^{\circ} 56'$.

HING-NGHAN, a city of China, of the second rank, in Chen-si, on the river Han. N. lat. $32^{\circ} 34'$. E. long. $108^{\circ} 54'$.

HINGWANG, in *Natural History*, a name given by the people of the East Indies to a species of red arsenic, which they use in painting and in medicine. They find it in and about the copper mines. It is calcined several times, in order to fit it for internal use. In painting, it makes a very fine orange-colour; but when mixed with cerufs, it makes a lemon-colour, and any other shade of yellow.

It seems to contain some portion of silver, and some cinna-
bar.

HINIGAN, in *Geography*, a town of the Arabian Irak; 100 miles W. of Basora.

HINISBURG, a post-town of America, in Chittenden county, Vermont, E. of and joining Charlotte on lake Champlain, containing 933 inhabitants.

HINKA, a lake of Chinese Tartary, about 108 miles in circumference. N. lat. $44^{\circ} 35'$. E. long. $132^{\circ} 29'$.

HINKAN, a chain of mountains of Chinese Tartary, which reach from N. lat. 55° to 53° and from E. long. 134° to 137° .

HINLOPEN STRAITS, a channel of the North sea, between North-Eastland and Spitzbergen.

HINNERJOKI, a town of Sweden, in the government of Abo; 30 miles S. of Biorneborg.

HINNULUS, in *Zoology*, a hind; the young of the deer or goat kind.

HINNULUS. See *MOSCHUS Pygmaeus*.

HINNY, a spurious or hybrid quadruped, the produce of the horse with the female ass. Its size is less than that of the horse, the ears and mane the same as in that animal; the colour is redder, and the tail like that of the female parent.

HINOJARES, in *Geography*, a town of Spain, in the province of Jaen; 15 miles S.E. of Ubeda.

HINOJOSA, a town of Spain, in the province of Leon; 25 miles N.N.W. of Ciudad Rodrigo.—Also, a town of Spain, in the province of Estremadura; 16 miles N. of Llerena.—Also, a town of Spain, in New Castile; 10 miles N. of Molina.

HINOJOSAS, LAS, a town of Spain, in New Castile; 36 miles S. of Hueta.

HINSDALE, a township of America, in Cheshire county, New Hampshire, on the east bank of Connecticut river, opposite to Vernon in Vermont, incorporated in 1753, and containing 634 inhabitants; 38 miles above Northampton.

HINZUAN. See *JOANNA*.

HIO, a town of Sweden, in West Gothland, seated on the Wetter lake, with a good salmon fishery; 80 miles N.E. of Gotheborg. N. lat. $58^{\circ} 20'$. E. long. $13^{\circ} 58'$.

HIORRING, a town of Denmark, in N. Jutland, and diocese of Aalberg, formerly a large city and the see of a bishop, with three churches; but in 1693 almost destroyed by fire, so that the bishopric was removed to Aalberg by Frederic II.; 27 miles N.N.W. of Aalberg. N. lat. $57^{\circ} 27'$. E. long. 10° .

HIORTED, a town of Sweden, in the province of Smaland; 60 miles N. of Calmar.

HIORTOE, a small island of Denmark, near the W. coast of Taafinge. N. lat. $54^{\circ} 53'$. E. long. $10^{\circ} 30'$.

HIP, in *Architecture*, a piece of timber placed between every two adjacent inclined sides of a hipped-roof, for the purpose of fixing the jack rafters. For the manner of finding the length and backing of the hips, see *HIPPED ROOF*.

HIP, a particular part of an animal. See *HAUNCH*.

HIP, in the *Materia Medica*, the fruit of the cynosbatus shrub, wild briar, hip-tree, or dog-rose. See *ROSA Canina*.

Hips are agreeably dulco-acid, and stand recommended as cooling restringents, in bilious fluxes, sharpness of urine, and hot indispositions of the stomach; but they are very little used in the shops, except in the *conserva*, which see.

HIP-gout, in *Medicine*. See *SCIATICA*.

HIP-joint, Disease of. What is usually understood by the disease of the hip-joint, in *Surgery*, is a distemper very ana-

logous to the white swelling of other articulations. By several writers it is treated of under the name of *ischias*, which term, however, has been mostly applied to rheumatic affections of the hip. Like the white swelling, the disease of the hip-joint probably has its varieties, some of which are undoubtedly connected with scrofula, while others cannot be suspected of having any concern with a strumous habit. Mr. Crowther observes, that no case has hitherto occurred to him, in which the patient was not of the latter kind of constitution, although, if we understand him rightly, he adds an exception in regard to some of the cases, which are produced by accidents. (On White Swelling, &c. p. 257, 258, edit. 2.) We believe, that, in a given number of cases, there are more diseased hips, quite independent of scrofula, than there are white swellings of other joints. It is universally acknowledged, by all experienced surgeons, that young subjects are most liable to scrofulous diseases, and, of course, to that affection of the joints, which is commonly considered to be connected with a strumous constitution. If a person live to the age of five and twenty, perfectly free from all scrofulous symptoms, the hazard of his ever becoming afterwards afflicted with a true scrofulous complaint may be regarded as almost entirely past. Hence, all morbid affections of the joints, first occurring after this period of life, and under such circumstances, cannot be reasonably considered as having any connection with scrofula.

The generality of surgical authors seem to agree, that the disease of the hip-joint is most commonly met with in children under the age of fourteen, and, in this respect, it is exceedingly analogous to the true white swelling. But no age is exempt from the malady: so that, though children form a large proportion of those subjects who are afflicted, yet the number of adults, and even of old persons, is much more considerable, in a given number of these cases, than we find to occur in the same number of cases, in which the knee is diseased. Such is our reason for believing, that there are more hip cases unconnected with scrofula, than there are examples of white swellings being similarly circumstanced. The observation is of course only applied to a definite number of cases of each disease; for the much more frequent occurrence of morbid knees, ankles, wrists, and elbows, would destroy the accuracy of the remark, if taken in a general sense.

The approach of the hip disease is far more insidious, than that of a white swelling. The latter is generally preceded by severe pains; while the only fore-runner of the former is frequently a slight weakness and limping of the affected limb. This state is too often overlooked, and, when noticed by men little versed in the profession, is commonly treated on principles the most repugnant to surgical science. Embrications are generally prescribed, without any injunction to keep the limb in a quiet state. The application is also oftentimes made to the knee, or other part of the extremity; for as there is frequently an uneasiness about that joint, when the hip is affected, and as no pain whatever is sometimes mentioned, as occurring in the latter situation, till a more advanced period of the malady, it is not uncommon to see careless practitioners directing their remedies to some situation very different from that of the disease. This combination of neglect and ignorance is the more to be lamented, inasmuch as the incipient period of the complaint is the only one, in which a favourable prognosis can ever be made, mere rest, and repeated topical bleeding, having now more effect, in the course of a fortnight, than large painful issues will afterwards generally have in the long space of a twelvemonth.

The

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The first diagnostic symptoms of disease in the hip-joint, if we merely look for them in the situation of that articulation, are not particularly conspicuous. It is true, that a fixed pain behind the trochanter major, in some instances, very soon excites the attention of the surgeon to the seat of the morbid affection. But mere pain in a joint, quite free from visible enlargement, and external change of colour, is generally disregarded as a complaint of no importance in young subjects, and as a mere rheumatic, or gouty affection in adults. Even when the pain begins to be severe, it is commonly not confined to the seat of the disease, but shoots downward, in the course of the vastus externus muscle, to the knee, and along the outer part of the fibula to the malleolus externus. The patient often refers most of his painful sensations to the groin. In short, there is no particular symptom occurring in the precise situation of the morbid affection, so as to form an infallible pathognomonic mark of its existence. But still the characters of the disease are very strong, when examined by a surgeon, who has paid attention to the subject.

Almost as early as the least limping can be perceived, some diminution in the circumference of the leg and thigh has actually taken place, as may be easily discovered by a careful measurement.

The hip-joint is deeply situated, so that its accidents and diseases cannot be examined as readily as those of many other articulations. The generality of surgeons little think, that the proper place for pressing on the hip-joint, with a view of ascertaining the presence of disease, is a little on the outside of the femoral artery, soon after it has descended below the brim of the pelvis. At this spot, the surgeon may apply pressure to the front of this large articulation, and if it be diseased, considerable pain will be the consequence of the experiment.

The limping gait denotes, that something is wrong in the limb, and if this symptom cannot be attributed to an affection of the vertebrae, or a recent accident; and if it be conjoined with the above-mentioned emaciation of the affected member, an exasperation of pain on pressing the front of the acetabulum; the evidence of disease in the hip becomes more and more convincing. It has appeared to us, that the weakness of the lower extremities from diseased vertebrae always affects both limbs at once, and is unattended with pain about the knee, circumstances completely discriminating this complaint from the feebleness of the limb, arising from the disordered state of the hip-joint.

The marks of discrimination, just pointed out, between two diseases of so different a nature, may appear to some persons quite superfluous. We entertain an opposite opinion. The disease of the vertebrae, and the affection of the hip, are both in the incipient state often attended with little else than a certain weakness in walking, at least with no other symptom, which would strike an uninformed person. Almost every surgeon must have seen many cases in which the vertebrae are diseased, and attended with more or less lameness, without there being any preternatural projection of the spinous processes whatsoever. Such projection, indeed, from the nature of the changes going on in the bones, can never happen, till the disease has made considerable advance. Besides, it is a well known fact, that some practitioners are either so negligent, or ignorant, that they never advert at all to the state of the back, as the cause of lameness. How many cases have we seen, in which children's legs have been rubbed with liniments, while their backs were never examined, nor suspected, as being the seat of the primary disease, to which the paralytic weakness of the limbs was en-

tirely owing. If Mr. Crowther's assertion be true, that in cases of diseased vertebrae, one limb is little affected with lameness, while the power of the other is much impaired, the necessity for every sign of discrimination will be still greater, because, when the spinous processes do not project, as is often the case at first, a serious lameness on one side will be the only one particular complaint, both in disease of the spine and of the hip. The observations, however, which we have made, by no means justify the conclusion, that either in the early or advanced period of the distemper of the vertebrae, one leg is always, or even generally, affected with little lameness in comparison with the great weakness of the other. But whether there are examples, in which one limb suffers so much more than the other or not, has nothing to do with the fact advanced, that in cases of diseased vertebrae, both limbs are affected with weakness. The projection of the spinous processes is, in the earlier periods of the disorder, far less invariable.

Another remarkable symptom of the disease of the hip, in its early stage, is an elongation of the limb, a circumstance, which is quite manifest, on comparing the condyles of the os femoris, the patella, the trochanter major, and the malleolus internus of the diseased limb, with the same parts of the sound one.

Until lately, no satisfactory explanation had been given, by surgical writers, of the manner in which the lengthened state of the limb was produced in the early stage of the hip disease. "The ancients, and, indeed, many practitioners, even of modern times, have assigned as causes of the increased length of the limb, a supposed relaxation of the orbicular ligament, or a distention of the articular cavity by fluid effused into the capsule. Such are the notions brought forward by Galen and Fabricius, to illustrate the meaning of the two aphorisms of Hippocrates, concerning the nature of this disease." *Sæpe in articulis humor pituitosus accervatur, quem myxam appellat, (Hippocrates,) a quo madefacta articulationis ligamenta, laxiora redduntur: atque ideo facile a cavitate articulus excidit, et rursus non cum difficultate incidit.* Galen in Aphor. Hippocr. Comm. 6. See Crowther on White Swelling, &c. p. 259. edit. 2.

We shall pass over the erroneous opinions, that the limb is lengthened by a distention and relaxation of the orbicular ligament, or by a swollen state of the head of the thigh-bone, and a thickening of the acetabulum, or in consequence of a destruction of the articular cartilages, and of the ligament completing the lower and inner margin of the acetabulum. In short, nothing can be more certain, than that while the elongation of the limb lasts, the head of the bone must be situated in the acetabulum, or else the muscles would draw the bone upwards, and shorten the member, as we find actually occurs as soon as the upper and posterior part of the acetabulum, and the ligamentum teres are so destroyed, that they make no resistance to this kind of dislocation.

If then the head of the bone does not quit its situation, the lengthened state of the limb can depend upon nothing less, than an alteration in the position of the pelvis. That the pelvis does undergo a change of its posture is now perfectly ascertained. The publication in which this fact was first noticed, we believe, is Dr. Falconer's pamphlet on ischias. "The tubercle, or lower part of the ischium may, in many instances, but not always, be discovered by feeling it behind to be lower on the affected side than the other. A man, now in the hospital, is a remarkable instance of the difference between the height of the bones on each side; and a pelvis of a person who died at the same place, and was preserved there many years, shewed it still more strongly." It ap-

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appears, from some remarks in Mr. Crowther's work on the white swelling, that Mr. John Hunter used to attribute the lengthening of the limb to the situation of the pelvis. Mr. Crowther and Mr. Lawrence instituted together an examination of this point, upon two children with diseased hips, and they ascertained, that when the patients were laid on the table, with the whole body in a straight line, the anterior superior spinous process of the ilium on the affected side was lower than that of the sound one, just in proportion to the difference in the length of the two limbs; this was about a quarter of an inch in one patient, and a full inch in the other. A similar obliquity of the pelvis was equally manifest from behind, when the patients were placed on the abdomen, with the precaution of laying the body in a straight line. It was impossible to place the pelvis in its natural horizontal position, without bringing the body into a curved line, and when this was done, the lower extremities, instead of falling straight under the body, deviated from the perpendicular towards the diseased side. A straight line drawn along the spinous processes of the sacrum, and continued downwards, did not fall between the lower limbs, as it would in a pelvis, possessing its natural position, but, on the contrary, extended to the heel of the sound limb. Mr. Crowther thinks, that in these cases, the obliquity of the pelvis can be ascribed to no other cause, than that of the patient's endeavouring to throw the weight of the body, as much as possible, on the sound hip. The pain, and the general weakness of the affected limb, induce a constant effort of this kind. Hence children are observed bending the knee and hip, and hopping about on the healthy limb. The pelvis naturally sinks on the diseased side, and this deviation, which would affect the centre of gravity of the whole body, is counterbalanced by a bend of the upper parts of the trunk towards the sound side. Accordingly, both the patients under Mr. Crowther were noticed to incline their heads towards the shoulder of the sound side of the body. On *White Swelling, &c.*, p. 265--268, edit. 2.

Another remarkable symptom which attends the disease of the hip-joint, is the alteration in the natural fulness and convexity of the nates, that part appearing flattened which is usually most prominent. The glutæus magnus becomes emaciated, and its edge no longer forms so bold a line, as it naturally does, at the upper and back part of the thigh, in the sound state of the limb. This is one very strong feature of the early state of the disease, and has been accurately represented in one of the plates of the late Mr. Ford's book on the present subject.

Though there may be more pain about the knee than the hip at some periods of the malady in its incipient state, the former joint may be bent and extended without any increase of uneasiness; but the thigh-bone cannot be moved without a vast increase of the patient's sufferings.

Patients with diseased hips soon get into the habit of bearing the weight of the body chiefly on the other limb, so that they bend the thigh of the affected side forwards, in order to touch the ground only lightly with the foot. This is at all times found to be the most easy position of the limb, and every attempt to put the member in a straight posture gives considerable pain.

Such is the first stage of the disease in its ordinary form, in which we generally find the health little disturbed.

When the hip is touched, the patient does not in general suffer any particular pain, unless the pressure be applied to the front of the joint, the part which is undoubtedly the most superficial. Yet it deserves notice, that a few instances do occur, in which all the soft parts surrounding the joint

are tense, exceedingly painful when handled, and in which the integuments are even tinged with a light pink colour.

It remains for us to describe the second stage of the disease, or that which is attended with suppuration.

The symptoms which are the fore-runners of the formation of pus, are different in different cases. This variety depends upon the presence of acute or only chronic inflammation. When the former occurs, the parts surrounding the joint become tense and extremely painful; the skin is even reddish, and the patient experiences an attack of inflammatory fever. As the local pain abates, rigors take place, a swelling forms in the vicinity of the joint, and very soon points.

When the abscess is the consequence of that languid kind of inflammation which usually occasions serofulous collections of matter, there is not so remarkable an increase of pain in the articulation, before the commencement of suppuration. Startings and other spasmodic complaints have been set down as the most certain signs of the formation of matter in this disease. When the pus is formed in this slow manner, it does not make its way to the surface of the body so quickly, as when the abscess has been the immediate result of an attack of active inflammation on the morbid joint. A large fluctuating tumour presents itself; but it does not directly point. The patient suffers greater uneasiness in the part; yet his sensations do not amount to that acute description of tenderness, which affects in the foregoing instance not only the deep, but also the most superficial parts around the articulation.

At length the limb becomes shortened, and this circumstance, when the retraction is very considerable, arises from nothing less, than an actual dislocation of the head of the thigh bone, in consequence of the destruction of the cartilages, ligaments, and articular cavity. The shortening of the limb may happen before suppuration as well as after it. There are instances, in which the head of the bone is dislocated, and anchylosis ensues without the occurrence of any abscess at all.

Sometimes, before matter is formed, the patient is seriously debilitated by hectic symptoms. In the suppurative stage of the distemper, these effects on the constitution always become worse. The patient loses his appetite, cannot sleep, has a small frequent pulse, colliquative sweats; and, too often, a very obstinate and debilitating diarrhœa.

The openings through which the abscess is discharged continue, in most instances, to emit an unhealthy kind of matter for a long time after their first formation, becoming in fact the terminations of sinuses, which lead down to the diseased joint.

When the disease follows external violence, the inability of using the limb is said by Sabatier not to be so complete, as when that symptom depends upon a fracture of the neck of the thigh bone; a circumstance, which may assist the judgment of the surgeon in any doubtful case.

When a diseased hip is examined after death, collections of matter are often seen on the glutæi muscles, on the dorsum of the os ilium, and in the acetabulum. Sometimes, the muscles at the upper and fore-part of the thigh are covered with pus: The femur is frequently found drawn up on the external surface of the ilium. The cartilage which covers the head of the thigh bone is occasionally quite destroyed, while the round ball itself is marked with deep excavations, the effect of caries. The acetabulum is often totally destroyed, so that the os femoris, not being confined in the articular cavity, is pulled upwards by the muscles. Even the outside of the ilium is sometimes affected with a kind of caries.

According to Mr. Ford, the os innominatum is always
more

more extensively carious than the thigh bone. We have seen a case, where the head of the latter bone was quite perfect, notwithstanding the acetabulum was completely annihilated. If this statement be generally, or even frequently correct, it must refute the doctrine of De Haen, that the distemper begins in the soft parts, at the same time, that it displays the absurdity of all thoughts of undertaking amputation at the hip, since most of the disease, situated on the bones of the pelvis, could not be taken away.

The remote causes of the hip disease are very imperfectly understood. External violence is undoubtedly one, and the testimony of numerous respectable writers confirms, that lying down on the damp ground in summer time, and, indeed, all kinds of exposure to damp and cold, are frequently conducive to the origin of the disorder. For this reason, the lower orders of society are rather more subject to the affliction than the higher classes. The particularities, however, in the affected joint, or, in the constitution, which cause the disease to take place in some persons, and not in others, though similarly circumstanced in life, are perhaps beyond the reach of human investigation. A scrofulous habit is certainly one predisposing circumstance; but the disease often takes place without any suspicion of scrofula, and without any palpable cause whatever.

When the disease is attended with a degree of active inflammation, the most advantageous treatment is topical bleeding with leeches, cupping the circumference of the affected joint, and applying the saturnine lotion. When the pain is severe, the hip may be fomented in the morning and evening, and an opiate may be administered at night. Care must be taken to keep the bowels open with mild purgatives.

The foregoing plan is always highly beneficial, while there are manifest marks of active inflammation about the joint. But it is not to be continued after such state has subsided. Morbid anatomy tends to shew, that the hip disease consists in the same alteration of the bones, ligaments, and cartilages, as we find prevails in the generality of white swellings. Experience proves, that both diseases ought to be treated on similar principles. The plan, therefore, on which the best surgeons place the greatest reliance, is the endeavour to stop the progress of the disease by making an issue with caustic just behind and below the great trochanter. This issue is to be kept open with peas. The benefit which it effects, is accomplished not merely through the discharge that is produced, but also on the principle of counter irritation. For nothing is more certain in medical science, than the frequent possibility of arresting and subduing one disease by the artificial formation of another. In general, it will be requisite to keep the issue open for several months, or even a year or two, before the distemper is effectually checked. During all this time, the patient should be advised to rest the limb as much as possible.

The efficacy of the Bath water, in the cure of the hip disease, has been much praised by Drs. Oliver, Charlton, and Falconer. The patient is put into a warm bath for 15 or 25 minutes, two or three times a week. It is to be noticed, that the Bath water is only recommended as an external application, and merely in the early stage of the disease, before suppuration has commenced. We suspect, that many cases, which have been set down as cured by the Bath water, have been rheumatic affections; and we believe that any warm bathing would have had equal power over the hip disease.

When abscesses form, the surgeon should let out the matter, and apply a poultice. The issue, however, is not to be discontinued; or, if the inflammation or any other circumstance should compel the surgeon to heal it for a time, it will be proper to make another as soon as the joint is in a

more easy state. We scarcely need observe how necessary it is to support the patient's strength with tonics, good air, eligible nourishment, &c. when hectic symptoms prevail. Pain is to be appeased, and sleep procured by opium. See Ford on the Disease of the Hip-joint, Falconer on Ischias, Crowther on White Swelling; edit. 2. Samuel Cooper on the Diseases of the Joints.

Hip-mould, in *Building*, is by some used for the back of the hip. Others understand it as a prototype, or pattern, commonly made of a piece of thin wainscot, by which the back and the sides of the hip are set out.

Hip-shot, a disorder of a horse, when he has wrung or sprained his haunches or hips, so as to relax the ligaments that are to keep the bone in its due place.

The signs are, that the horse will halt much, and go aside-long, trailing his leg after him; and the hip which is hurt will be lower than the other, the flesh falling away on the side of his buttock.

Hip-tiles. See *TILES*.

HIPPA, in *Zoology*. See *CANCER*.

HIPPAGOGA, in *Antiquity*, a vessel used in transporting horses. It was otherwise called hippago.

HIPPARCHION and *RUFFINUS*, in *Biography*, celebrated performers on the lyre, meeting in contention for the prize at the public games, Hipparchion was so terrified at the sight of the crowd in the theatre, that he was utterly unable to dispute the premium, which was bestowed on Ruffinus. Hence the name of Hipparchion became proverbial for any one who promised much, and performed nothing.

HIPPARCHIA. See *CRATES*.

HIPPARCHUS, an ancient astronomer, was born at Nice, in Bithynia, and flourished between the 154th and 163d Olympiads. He was the first person who attempted to count the number of the fixed stars; and his catalogue is still preserved in Ptolemy's "Almagest," where they are set down with their longitudes and apparent magnitudes. According to Pliny he foretold the course of the sun and moon for 600 years; he predicted the times of eclipses, and taught mankind that they ought not to be alarmed at the recurrence of such phenomena. Thales was the first among the Greeks who could foretell the approach of an eclipse; and among the Romans, Sulpitius Gallus began to be successful in that kind of prediction, and he made a seasonable essay of his skill on the night before the day in which the decisive battle against Perseus was fought. Hipparchus came after these, and greatly improved that science, making ephemerides, and other learned and useful helps to the practice of astronomy. He discovered a new star; and he is memorable for having been the first who discovered the *PRECESSION of the Equinoxes*, which see. He endeavoured to reduce to rule the many discoveries which he had made, and invented new instruments by which he marked the places of celestial objects, and their magnitudes. Hipparchus made his first observations in the isle of Rhodes, but he afterwards pursued his studies in Bithynia and Alexandria. His commentary upon the phenomena of Aratus, which is a kind of criticism on that poem, is still extant. This commentary was first published by Peter Victorius at Florence, about the middle of the 16th century; but a more correct edition of it was given by father Petau, with a Latin version and notes, in his *Uranologia*, published at Paris, 1650. Hipparchus was author of many other works, which were highly spoken of by the ancients, but which are now lost. Every man of science has without hesitation agreed in rendering a just tribute to the praise of this astronomer, on account of the obligations which this kind of knowledge is under to him. He is likewise celebrated for his ardent patriotism and public spirit, under the influence of which he

is said to have been greatly instrumental in delivering his country from tyranny. He is thought to have died about 125 years before the Christian era, and statues were erected to his memory. Bayle. Hutton's Math. Dict.

HIPPARCHUS's *Period*. See PERIOD.

HIPPASUS, in *Biography*, is enumerated among the Greek writers on music whose works are lost. He was a native of Metapontus, a disciple of Pythagoras, and, according to Theon of Smyrna, an excellent musician.

HIPPED ROOF, in *Architecture*, is that whose ends rise immediately from the wall plate, with the same inclination to the horizon as the other two sides of the roof have.

Backing of a hip is the angle made on its upper edge, to range with the two sides or planes of the roof between which it is placed.

Jack rafters are those short rafters fixed to hips equidistantly disposed in the planes of the sides and ends of the roof, and parallel to the common rafters, to fill up the triangular spaces, each of which is contained by a hip rafter, the adjoining common rafter and the wall plate between them.

The feat or base of the rafter is its ichnographic projection on the plane of the wall-head, or on any other horizontal plane.

The principal angles concerned in hipped roofing are, the angle which a common rafter makes with its feat on the plane of the wall-head; the vertical angle of the roof; the angle which a hip makes with the adjoining common rafter; the angles which a hip make with the wall plate on both sides of it; the angle which a hip rafter makes with its feat; and the acute angle which a hip rafter makes with a vertical line. The principal lengths concerned are, the height of the roof; the length of the common rafters and their feats; the length of the hips and their feats; and, lastly, the length of the wall plate contained between the lower end of a hip and the lower end of the adjacent common rafter.

The sides and angles may be found by geometrical construction or trigonometrical calculation. It is evident, that if the hipped end of a roof be cut off by a vertical plane parallel to the wall, through the upper extremity of the hips, it will form a rectangular pyramid, or one whose base is a rectangle. The base of this pyramid is bounded by the wall plate between the two hips on one side, and on the opposite side by the feat of the two adjoining common rafters; on the other two opposite sides by that part of the wall plate on each side contained by the lower end of the hip and the next common rafter adjoining. One of the sides is the isosceles triangle contained by the two adjoining common rafters with their feat; the opposite side is the hipped end of the roof, forming also an isosceles triangle; the other two opposite sides are the right-angled triangles contained by the two hips and the two adjoining rafters on the side of the roof. This rectangular pyramid may be divided into three triangular pyramids by the two vertical triangular planes, formed by the hip rafters, their feats, and the common perpendicular from their vertex.

Two of these pyramids, when the plan of the building is a rectangle, are equal and opposite. In each of these equal and opposite pyramids the base is a right-angled triangle, contained by the feat of the hip rafter, the feat of the adjoining common rafter, and the part of the wall plate between the hip and the adjoining common rafter. One of the sides is a right-angled triangle contained by the adjoining common rafter, its feat, and perpendicular; a second side is a right-angled triangle contained by the common rafter, the

hip rafters, and the wall plate between them; and the remaining third side is the triangle contained by the hip rafter, its feat and perpendicular. With regard to the remaining pyramid, its base is a right-angled triangle contained by the feats of the two hips and the wall plate between them, the right angle being that contained by the feats of the two hips; two of its sides are the triangular planes passing the hip rafter, which are also common to the other two pyramids; its third side is the hipped end of the roof.

Given the plan of a building, or the form of a wall plate of a hipped roof, and the pitch of the roof, to find the various lengths and angles concerned, whether the roof is square or bevel.

To find the Length of the Rafters Geometrically.—Let ABCD (*Pl. LXXXV.*) be the plan. Draw EF parallel to the sides AD and BC in the middle of the distance between them. On DC, as a diameter, describe the semicircle DFC. Draw FD and FC, then the angle DFC is a right angle. Draw GFH perpendicular to EF, cutting the sides AD and BC in G and H. From FE cut off FI equal to the height or pitch of the roof, and join GI. From FC cut off FK equal to FI, and join KD; then GI is the length of a common rafter, and DK that of the hip; for if the triangles GFI and DFK be turned round their feats, GF and DF, until their planes become perpendicular to the triangle GFD, the perpendicular FI will coincide with FK, and the point I will coincide with the point K; the lines GI and DK, representing the rafters, will then be in their true position.

The same by Calculation.— $G I^2 = G F^2 + F I^2$ (Euclid 1. 47), therefore $G I = (G F^2 + F I^2)^{\frac{1}{2}}$ the length of the common rafter, $D F^2 = G F^2 + G D^2$ the square of the feat of the hip. $D K^2 = D F^2 + F K^2 = G F^2 + G D^2 + F I^2$,

therefore $D K = \sqrt{G F^2 + G D^2 + F I^2}$.

In the same manner the other hip rafter CL is found, as also the hip rafters AM and BN.

To find the Backing of the Hips and the Shoulders of Jack Rafters and Purlins.

Geometrically.—Let it be required to find the backing of the hip rafter, whose feat is CF.

Imagine the triangle CFL to be raised upon its feat CF, until its plane becomes perpendicular to the plane of the wall plate ABCD, then there will be two right-angled solid angles; the three sides of the one are the plane angles FCD, FCL, and the hypothenuſal plane angle DCL. In each of these solid angles the two sides containing the right angle, viz. the plane angles FCH, FCD, and the perpendicular plane angle CFL, which is common to both, being given, to find the two opposite inclinations to the sides FCH and FCD, and the remaining third sides.

Now the angles GDC and HCD are bisected by the feats FD and FC of the hip rafters; for if EF is produced to meet DC in U, U will be the centre of the circle DFC; and UC, UF, UD, are equal to each other: and because UF is equal to UC, the angle CFU is equal to FCU; but CFU is equal to the alternate angle FCH; therefore the angle FCU is equal to FCH: that is, the angle UCH is bisected by the feat FC of the hip rafter. In the same manner it may be shewn that UDG is bisected by the feat DF of the other hip rafter. From any point O in FC, draw OV perpendicular to LC, cutting it in P, and OW perpendicular to FC, cutting DC in W; from OC cut off OQ equal to OP. Join QW, then OQW will be the inclination opposite the plane angle

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angle FCU, and this is the angle which the end of the roof makes with the vertical triangle contained by the hip rafter, its seat and perpendicular. Produce WO to meet BC in X, and join QX, then WQX is the inclination of the two planes of a side, and end of the roof, whose intersections are BC and CD, on the plane of the wall-head. Now the angle WQX, which is double the angle WQO, is the backing of the hip. Make PV equal to QW, and join CV, then will PCV be the angle contained by the two sides LC, CD, or that of the hypothenufial plane angle contained by the intersection BC, and the hip rafter LC. This angle may be otherwise found thus: produce GH to R; make CR equal to CL, then the angle HCR is equal to PCV. Now the angle HCR, or PCV, is the angle which the purlins (when one of their faces is in the side of the roof) makes with the hip rafter LC; and the angle CVP, or CRH, is the angle which a jack rafter makes with the same hip: in the same manner may the backings of the other hips be found. The other bevel of the jack rafters is the angle HIF. To find the other bevel for cutting the shoulder of the purlin proceed thus: on F, as a centre, with the distance FG, describe the arc GY; draw FY perpendicular to GI; YZ parallel to EF, cutting FD in Z, and Z & parallel to GH, cutting AD in &. Join & F, then G & F is the angle which the other side of the shoulder makes with the length of the purlin.

At the upper end of this diagram is shewn the manner of finding the two bevels for cutting the shoulder of the purlin against the hip rafter, when the side of the purlin is not in the plane of the side of the roof.

To find the same things by calculation.—The backing of the hip rafter, and hypothenufial side, is obtained as follows: it has been shewn that the three plane angles, and the three inclinations of solid angles, consisting of three plane angles, are found exactly as the sides and angles of spheric triangles, any three parts being given; the degrees of the plane angles being exactly the same as the sides of the spheric triangle, and the inclinations the proper measures of the spheric angles; therefore if two of the plane angles should be perpendicular to each other, the spheric triangle representing this solid angle will have also two of its sides perpendicular to each other. Now in this, there are given the two sides containing the right angle to find the hypothenufe and angles.

It is shewn by writers on spherical trigonometry, that in any right-angled spherical triangle, radius is to the cosine of either of the sides, as the cosine of the other side to the cosine of the hypothenufe. Suppose the plane angle FCL to be 27°, and the angle FCH 52°, to find the hypothenufe and angles of a right-angled spherical triangle, one of whose legs is 27° and the other 52°, it will therefore be

$$\begin{array}{l} \text{As radius, sine of } 90^\circ \quad \quad \quad = 10.00000 \\ \text{Is to the cosine of FCL, } 27^\circ \quad \quad = 9.94988 \\ \text{So is the cosine of FCH, } 52^\circ \quad \quad = 9.78934 \end{array}$$

$$\begin{array}{r} 19.73922 \\ 10.00000 \\ \hline \end{array}$$

$$\text{To the cosine of the hypothenufial side } \left. \begin{array}{l} 56^\circ 44' \end{array} \right\} = 9.73922$$

This ascertains the angle which the jack rafter makes with the hip. Since all the sides are now given, we shall have, by another well known property of the sines of the sides

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being as the sines of the opposite angles, the following proportion,

$$\begin{array}{l} \text{As the sine of the hypothenufe } 56^\circ 44' \quad = 9.92227 \\ \text{Is to the sine of a right angle, or } 90^\circ \quad = 10.00000 \\ \text{So is the sine of the side FCH, } 52^\circ \quad = 9.89653 \end{array}$$

$$\begin{array}{r} 19.89653 \\ 9.92227 \\ \hline \end{array}$$

$$\text{To the sine of the opposite angle } 70^\circ 28' \quad = 9.97426$$

$$\text{Therefore the backing is twice } 70^\circ 28' \quad = 140^\circ 56'$$

In finding the angle opposite the side FCH, it was not necessary that the hypothenufial side should have first been found, it might have been found independently thus: the sine of either of the sides about the right angle is to radius, as the tangent of the remaining side is to the tangent of the angle opposite to that side; therefore

$$\begin{array}{l} \text{As the sine of the side FCL, } 27^\circ \quad \quad = 9.65705 \\ \text{Is to the tangent of the side FCH, } 52^\circ \quad = 10.10719 \\ \text{So is radius, sine of } 90^\circ \quad \quad \quad = 10.00000 \end{array}$$

$$\begin{array}{r} 20.10719 \\ 9.65705 \\ \hline \end{array}$$

$$\text{To the tangent of the angle opposite the } \left. \begin{array}{l} \text{side FCH, } 70^\circ 28' \end{array} \right\} = 10.45014$$

In the same manner may other bevels be found by trigonometrical calculations; but as such extreme exactness is not necessary, the geometrical constructions ought to be well understood.

HIPPELAPHUS, among the *Ancient Zoologists*, was only the name of a large race of stags with longer hair on the neck, giving it the appearance of a mane. See CERVUS *Elaphus*.

HIPPER RIVER, in *Geography*, is a small river which rises in the East Moors of Derbyshire, in the township of Brampton, and falls into the Rother at the S.E. end of the town of Chesterfield. This river collects all the rain waters of about 7000 acres of land, according to Mr. Farey's Report of Derbyshire, vol. i., where the strata are mentioned over which it flows. A great variety of manufactures are established on this river in New or Little Brampton and Chesterfield.

HIPPEUS, or EQUINUS, in *Physiology*, a sort of comet which some writers suppose to bear a resemblance in its tail to a horse. But the shape of this kind of comet is not always alike; being sometimes oval, and sometimes imitating a rhomboides. Its train also is sometimes spread from the front or fore-part, and sometimes from the hind-part.

Hence this class of comets is distinguished into equinus barbatus, equinus quadrangularis, and equinus ellipticus. See COMET.

HIPPI PROMONTORIUM, in *Ancient Geography*, *Ras-el-Hamrah*, a promontory of Africa, E. of the promontory of Tapsus, and N.W. of the promontory of Stoborrum.

HIPPIA, a town of Greece, in Thessaly, in Perrhæbia. —Also, a fertile and delightful level country at the mouth of the Cephalus.

HIPPJA, in *Botany*, a name which seems to have originated with Valerius Cordus for the common Chickweed, *Stellaria media*, Fl. Brit. See his Hist. Stirp. 159. It is said by Ambrosinus to be derived from *ἵππος*, a horse, because it affords

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affords that animal a grateful food. Whatever truth there may be in this account, we are unable to trace the meaning of Linnæus in applying it to the little syngeneisous genus, resembling Tanfy, of which we are here to treat.—Linn. Mant. 158. Schreb. 586. Willd. Sp. Pl. v. 3. 2382. Mart. Mill. Dict. v. 2. Ait. Hort. Kew. v. 3. 278. Juss. 184. Lamarck. Dict. v. 3. 130. Illustr. t. 717. Gærtn. t. 164.—Class and order, *Syngenesia Polygamia-necessaria*. Nat. Ord. *Compositæ Discoidæ*, Linn. *Corymbifera*, Juss.

Gen. Ch. *Common Calyx* hemispherical, of several ovate, somewhat imbricated, scales. *Cor.* compound, discoid; with numerous male florets in the disk, and ten female ones in the circumference; the petal of the males is funnel-shaped, five-cleft, erect; that of the females obsolete, tubular, slightly three-cleft. *Stam.* Filaments in the male florets five, very short; anthers still shorter, united into a cylinder. *Pist.* Germen in the female florets large, bordered; style cloven; stigmas erect. *Peric.* none, except the unchanged calyx. *Seeds* in the female florets oval, encompassed all round with a very broad margin, without any crown. *Recept.* naked.

Eff. Ch. *Receptacle* naked. *Seed-down* none. *Seeds* with a broad margin. *Calyx* hemispherical, somewhat imbricated. *Florets* of the radius ten, obsolete, obscurely three-cleft.

1. *H. frutescens*. Linn. Mant. 291. Suppl. 390. (*Tanacetum frutescens*; Linn. Sp. Pl. 1183. *T. africanum arborescens*, foliis lavandulæ multifido folio; Comm. Hort. v. 2. 201. t. 101.)—Shrubby, erect, and hairy. Leaves pinnatifid. Flowers corymbose.

A native of the Cape of Good Hope, flowering in our greenhouses from February to August, and sometimes perfecting seed in the autumn. The whole plant is clothed with soft shaggy hairs, especially the young leaves and branches, and has the smell and taste of common Tanfy. *Stem* shrubby, round, alternately branched, leafy, five or six feet high, with a brown bark. *Leaves* scattered, stalked, an inch or inch and half long, deeply and elegantly pinnatifid, their segments numerous, parallel, elliptical, entire, decurrent into the stalk. *Flowers* terminal, corymbose, deep yellow, like Tanfy, but smaller. The chief beauty of the plant consists in its foliage, which is so regularly cut as to be almost pectinate. Indeed Linnæus, thinking it at one time an *Eriocephalus*, named it *E. pectinifolius* in his Syst. Nat. ed. 12. v. 2. 579.

2. *H. minuta*. Linn. Suppl. 389.—Herbaceous, procumbent, creeping. Leaves pinnate. Flower-stalks axillary, single-flowered.—Sent by Mutis from New Granada. *Root* of very long fibres. *Stems* procumbent, creeping, a few inches in length, branched, round, hairy. *Leaves* opposite at the base of the branches, otherwise alternate, scarcely an inch long, pinnate or very deeply pinnatifid, their leaflets or lobes much resembling those of the former species, but sometimes having one or two notches. They are hairy when young, nearly smooth when full-grown. *Footstalks* rather longer than the leaves, sheathing and membranous at the base. *Flower-stalks* axillary, longer than the leaves, deflexed, simple, slender, naked, solitary, each bearing an extremely small yellowish flower, of the difficulty of examining which the younger Linnæus might well complain; but he has copied his father's manuscript from the back of the specimen, and possibly the whole was written by the latter, as was the case with the greater part of the *Supplementum*, though published in the name of the former. We have already pointed out a mistake into which Jussieu has been

led respecting this plant. See *GYMNOSTYLES nasurtifolia*.

3. *H. stolonifera*. Broter. Lusit. v. 1. 373. Phytogr. fasc. 1. 29. Willd. n. 3.—Herbaceous, procumbent, creeping. Leaves pinnatifid. Flowers sessile at the root.—Frequent in Portugal, according to the worthy father Brotero, growing in moist ground; especially where the soil is chalky, and flowering in winter, sometimes so late as April. The plant is insipid and inodorous. *Root* annual, fibrous, crowned with the sessile flowers, and throwing out from beneath them a few shoots, scarcely above half an inch long. *Leaves* copious, radical, spreading in a circle, smooth or slightly downy, pinnatifid with five, seven, or only three lobes, which are very small and linear-lanceolate. *Footstalk* from half an inch to an inch long, being twice the length of the leaf, or more. *Florets* enveloped in down, all tubular; the females 40 or more, in the circumference; males seven or eight only, in the centre. *Corolla* of the females awl-shaped or brittle-like, closely embracing the style, with a scarcely perceptible limb; that of the males funnel-shaped, apparently three-cleft. The styles of the former all meet over the male florets in the centre, while the flower is in perfection. *Seeds* numerous, smooth, wedge-shaped, or obovato-triangular, the upper angles pointed; crowned with the style and a membranous partial calyx, without down, and winged longitudinally.—Such are the most important circumstances in Brotero's description, which certainly prove the plant a *Gymnostyles*, under which genus we should have ranged it, had this account come under our notice before. It does not appear to be any of the species we have described, but makes a fourth, and the only European one. We have not however seen any specimen.

4. *H. integrifolia*. Linn. Suppl. 389. (*Grangea*; Lamarck. Illustr. t. 699. f. 1.)—Roughish, upright. Leaves lyrate, unequally ferrated; the upper ones undivided. Flowers in terminal clusters.—Native of the East Indies? Our specimen came from the Paris garden, as the *Grangea* of Jussieu and Adanson; we have already alluded to it under the first species of that genus; (see *GRANGEA*;) but were not then aware of its being figured as such by Lamarck. The original specimen, named by the younger Linnæus, is very bad, and the leaves were not perceived by him to be lyrate. He not unaptly compares them to those of a nettle, which their deep unequal serratures resemble. The stem is herbaceous, a foot or two high, roughish. Leaves alternate, stalked, two inches long and one broad. Flowers the size of a small pea, in loose, terminal, erect clusters; their florets very numerous; receptacle convex; seeds obovate, bordered. We are certain this plant is not a *Grangea*, but dare not aver it to be a good *Hippia*, though we see no positive objection. The seeds indeed are much narrower than in *H. frutescens*.

5. *H. bicolor*. (*H. integrifolia*; Ait. Hort. Kew. v. 3. 278. *Sphæranthus africanus*; Burm. Ind. 185. t. 60. f. 2, but not of Linnæus; *Cotula bicolor*; Willd. Sp. Pl. v. 3. 2171, excluding the synonym of Lamarck.)—Roughish, spreading. Leaves obovate, deeply ferrated. Flowers in terminal, divaricated, leafy clusters.—Native of the East Indies. We had it (as the plant adopted by Willdenow from Roth,) out of the stove of the Cambridge garden in October, 1805, and have no doubt of the synonyms of Burmann and Aiton. It appears sufficiently distinct from the last described in its spreading mode of growth, paler colour, differently shaped and less divided leaves, whose serratures are more pointed, and in the divaricated clusters. In genus it certainly accords with the *integrifolia*, which name would suit the present species better than that to which it is applied. S.

HIPPIAS, in *Biography*, a philosopher of Elis, and a disciple

disciple of Hegesidamus; he was crowned at the Olympic games, and wrote upon music.

HIPPIATRICE, of ἵππος, *horse*, and ἰατρος, *physician*, the art of curing the diseases of brutes, and particularly horses.

This makes what we rather call the *farrier's art*. See **FARRIER**.

HIPPION, in *Botany*, a name synonymous in some authors with *Horfe Violet*, derived from ἵππος, *a horse*; but for whose application in the present instance we cannot account. It is retained by Schmidt in his *Flora Boëmica*, after Gesner, for the *Gentiana* with a bearded corolla, of which he makes a distinct genus. Mr. Brown, however, *Prodr. Nov. Holl.* v. 1. 450, quotes the *Hippion* of Schmidt as a synonym of what he considers as the real *Gentiana*, whose corolla is naked at its orifice.

HIPPIUM, in *Antiquity*, that part or tract of the *hippodrome* which was beaten with the horses' feet. See **HIPPODROME**.

HIPPO DIARRHYTUS, or *Zarytus*, in *Ancient Geography*. See **BISERTA**.

HIPPO-Regius, an ancient town of Africa; in that part of Numidia called the Eastern province or Constantina, situated near the sea, on a bay in the vicinity of the promontory of Hippo. The ruins of this ancient city are spread over the neck of land that lies between the rivers Boo-jeemah and Seiboufe, which near the bank is plain and level, but rises afterwards to a moderate elevation. They are about half a league in circuit, consisting of broken walls and cisterns. This city was called Hippo Regius, not only in contradistinction to the Hippo Zarytus, but from its having been one of the royal cities of the Numidian kings. For Silius Italicus (*l. iii. v. 259.*) informs us, that it was formerly one of their favourite seats; and indeed if a city strong and warlike, commodiously situated, as well for commerce as for hunting and diversion, that enjoyed a healthful air, and took in at one view the sea, a spacious harbour, a diversity of mountains loaded with trees, and plains intersected by rivers, would fix the affection and attachment of the Numidian kings, Hippo had all these circumstances to recommend it.

HIPPOBOSCA, in *Entomology*, a genus of the Diptera order, distinguished by having the mouth furnished with a short, straight, and cylindrical two-valved sucker, the valves of which are equal; the antennæ filiform; feet armed with numerous claws, and the body flat and hard. This is the Linnæan character, to which it is added by Scopoli that the rostrum has only one bristle. Geoffroy observes, that the hippoboscæ are the only dipterous insects that want stemmata, except the culices, and that their antennæ are setaceous, and composed of a single hair. According to Schæffer the abdomen is as broad as the thorax. Fabricius adopts the genus as proposed by Linnæus, with the following essential character. Beak short, straight, and bivalve, with the valves equal, and the antennæ filiform; adding, as a secondary character, that the body of the hippobosca is small, ovate, depressed, flat, glabrous, and immarginate: the head small, rounded, and flat: the eyes ovate, lateral, and distant; thorax ovate; scutellum large; and the wings two, membranaceous, and the length of the abdomen.

The hippoboscæ are denominated "Spider flies" by some English writers, no doubt in conformity with the French of Reaumur, "mouches araignées." This is not a name, however, by which they are exclusively known in France, being called in Normandy "mouches bretonnes," and elsewhere "mouches d'Espagne." In England also they bear the name of horse-flies, the largest species being extremely troublesome to horses. They haunt woods and marshy places,

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and are commonly found attached to the bodies of quadrupeds and birds, the blood of which affords them their natural subsistence. In the act of feeding they thrust their acute proboscis into the skin, and occasion a smarting sensation, similar to that inflicted in the bite of a flea, but rather more pungent. They move sluggishly, and with caution, and are at all times so firmly attached to the skin by the assistance of their numerous claws, that it is scarcely possible by any effort to remove them, unless by at the same time plucking out the flesh to which they adhere. The species are not numerous.

Some modern writers divide the hippoboscæ into three distinct genera, retaining to one the former term, and naming the other two *Ornithomyia* and *Melophagus*. The very close affinity the two first mentioned bear to each other in external appearance seems scarcely to allow a deviation so remote from the example of Linnæus and Fabricius as that proposed, and we rather wish to esteem them as two distinct families of the same natural tribe than as distinct genera: the difference that prevails in the structure of the antennæ in those two families is certainly remarkable, and the very peculiar distinction of the head is also to be considered, one having stemmata on that part, and the other none. With regard to *Melophagus*, the dissimilarity in its general appearance is far more striking to the casual observer, this, unlike the two former, being destitute of wings: in the structure of the antennæ it agrees with *H. equina*, a species admitted by every writer under the name of hippobosca. We shall consider these new genera as sectional divisions of the hippoboscæ in the subsequent arrangement.

* *Hippobosca*. Winged; eyes very distinct; head without stemmata; antennæ in the form of a globose tubercle inserted in a hollow at the base of the beak.

EQUINA. Wings obtuse; thorax variegated; feet armed with four claws. Linn. *Horse spider fly*, *Donov. Br. Inf.*

Inhabits Europe, and infests cattle, hiding themselves under the hairs, and attaching themselves firmly to the skin by means of the double pair of crotchets or hooks of their feet: it is of a disgusting form, flat, and hard, and, like the two succeeding species, not easily killed by pressure. The head is brown; thorax brown, varied with yellowish, and a band of the same down the middle; wings hyaline, with a brown spot near the outer margin; legs annulated with yellow and brown. Length about three quarters of an inch.

* *Ornithomyia*. Winged; eyes very distinct; head furnished with stemmata; antennæ lamelliform and advanced.

AVICULARIA. Wings obtuse; thorax immaculate. Linn. *Bird spider fly*, *Donov. Br. Inf.* *Ornithomye verte*, Latr.

Infests birds as the former infests quadrupeds, secreting itself among the feathers, and subsisting on their blood. The body is dull brown, with a greenish cast; size inferior to the former; length about half an inch.

HIRUNDINIS. Wings tapering to a point, feet with six claws. Linn. *Donov. Br. Inf.*

Body brown tinged with blueish; abdomen darker. Like the preceding, infests birds, but more generally the swallow, and is often found in the nest of the common European kind.

* *Melophagus*. No wings; eyes less distinct; antennæ in the form of a tubercle, lodged in a hollow; valves of the sucker longer than the head.

OVINA. Body dull, testaceous. Linn. *Donov. Br. Inf.* *Sheep spider fly*, *melophaga*, Latr. *L'hippobosque des moutons*.

Found lodged among the wool of sheep in Europe.

HIPPOCAMPUS, in *Ichthyology*, a species of *Syngnathus*; which see.

HIPPOCASTANUM, in *Botany*, from ἵππος, *a horse*, and καστανον, *a chestnut*, the Horse Chestnut. Clusius, in his *Hist. Plant.* v. 1. 8, says the name is a translation of the

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Turkish

Turkish appellation of this tree, *at cèstaneſi*, or *ad caſtaneſi*, given to it becauſe the fruit was found good for the cough or broken wind in horſes. (See *ÆSCULUS*.) Some have ſuppoſed this fine tree, ſo ornamental to our Engliſh plantations, parks, and avenues, a native of America; but it appears from the works of Cluſius to have been brought from Conſtantinople to Vienna, and was found wild by Mr. Hawkins, the companion of the late Dr. Sibthorp, on mount Pindus, of whoſe celebrated groves it makes a principal part. The greateſt wonder is, that no name or deſcription, applicable to ſo ſingular and beautiful a tree, ſhould be diſcoverable among the writings of the ancients, and that the epithet *pinifer* ſhould have been given to this famous mountain, but none expreſſive of what muſt conſtitute its great and peculiar beauty, the rich foliage and magnificent bloſſoms of the horſe-cheſnut. See *CLUSIUS*.

HIPPOCENTAUR, formed of *ἵππος*, horſe, *κένταυρος*, *pungo*, I ſpur, and *ταυρος*, bull, in *Antiquity*, a fabulous monſter, ſuppoſed to be half horſe and half man.

What gave occaſion to this fable was, that the people of Theſſaly, inhabiting near mount Pelion, became thus denominated, becauſe they were the firſt who taught the art of mounting on horſeback; which occaſioned ſome of their neighbours to imagine, that the horſe and man made but one animal.

The hippocentaurs ſhould ſeem to have differed from the centaurs, in this, that the latter only rode on bullocks, and the former on horſes, as the names themſelves intimate. (See *CENTAURS*.) Under that article it has been ſhewn that the appellation was derived from the practice of breaking or mounting horſes, for which the Theſſalians were the moſt famous. Theſe horſemen afterwards, in order to acquire greater ſtrength and agility, performed a kind of exerciſe, in which they fought with bulls, which they pierced with their javelins, or overthrew by graſping them by the horns. Pliny informs us, not only that this exerciſe was common among the Theſſalians, who invented it, but alſo that it was one of the ſtows which Julius Cæſar exhibited to the Romans. It is very probable, therefore, that in ſpeaking of theſe Theſſalians, they added to the name of Hippus that of Centaur, and hence of theſe three words, *ἵππος*, *κένταυρος*, was compounded that of hippocentaur, a horſeman-bull-ſhooter. As theſe horſemen became formidable afterwards by their depredations, the equivocation which appeared in the name made them to be accounted monſters compounded of two natures. The poets availed themſelves of this idea; and as in other inſtances they gave the air of marvellous to the ſubjects of which they treated, they made no difficulty in taking horſemen for Centaurs. And theſe horſemen became giants both in hiſtory and fable.

On the medals of Gallienus is repreſented a centaur drawing a bow, or holding a globe in the right hand, and the helm of a ſhip in the left; with this inſcription, *APOLLINI CONS. AUG. To Apollo the conſervator of Auguſtus*. Tritan conſiders both the one and the other as a ſymbol of the protection Gallienus received from Apollo in his wars againſt the Perſians.

HIPPOCEPHALOIDES, the horſe-head ſtone.

The word is derived from the Greek *ἵππος*, horſe, and *κεφαλή*, the head; and is a name given by Dr. Plot to a ſtone found in Oxfordſhire, and many other places, and ſuppoſed to reſemble the head of a horſe in figure, though the truth is, it requires a very warm imagination to make out the reſemblance.

The ſtone is compoſed of the matter of the common coarſer quarry ſtone, and owes its figure to a ſhell of the cockle-kind, into which having been received at a time when

it was ſoft and moiſt, it has taken the exact figure and lineaments of its inner parts. It is about the ſize of the larger bucardita, from an inch and a half to two inches and a half in length, and indeed very much reſembles that ſtone, having been formed wholly in the ſame manner, and in a ſhell of the ſame genus. Hill's *Hiſt. of Foffils*, p. 646.

HIPPOCRAS, *Vinum Hippocraticum*, a kind of medicated wine.

Menage approves the conjecture of thoſe who derive hippocras from Hippocrates, as ſuppoſing him the inventor of it, but we may better deduce it from the manica Hippocratis, or Hippocrates's ſleeve, uſed in the filtration of it.

Hippocras is a drink compoſed of wine, with ſpices and other ingredients infuſed in it; much uſed among the French by way of a cordial dram after meals.

There are various kinds of hippocras, according to the kind of wine, and the other additional ingredients made uſe of; as white hippocras, red hippocras, claret hippocras, ſtrawberry hippocras, hippocras without wine, cyder hippocras, &c.

That directed in our late college diſpenſary, is to be made of cloves, ginger, cinnamon, and nutmegs, beat, infuſed in canary, with ſugar; to the infuſion, milk, a lemon, and ſome ſlips of roſemary, are to be put, and the whole ſtrained through a flannel. It is recommended as a cordial, and is good in paralytic, and all nervous caſes.

HIPPOCRATEA, in *Botany*, is ſo named in commemoration of Hippocrates, the moſt celebrated of ancient phyſicians, and univerſally termed the "father of phyſic."—This genus was called *Coa* by Plumier, from the circumſtance of Hippocrates having been born in the iſland of Cos, and therefore uſually known by the name of Hippocrates Coas.—Linn. Gen. 25. Schreb. 34. Jacq. Amer. 9. Willd. Sp. Pl. v. 1. 193. Vahl. Enum. v. 2. 26. Mart. Mill. Diſt. v. 2. Juſſ. 251. Lamarck. Illuſtr. t. 28. (Coa; Plum. 6. t. 35. Bejuco; Læſ. It. 314.) Claſs and order, *Triandria Monogynia*. Nat. Ord. *Tribilata*, Linn. *Acera*; Juſſ.

Gen. Ch. Cal. Perianth of one leaf, ſpreading, minute, coloured, deciduous, deeply divided into five, roundiſh, ſpreading, obtuſe ſegments, larger than the corolla. Cor. Petals five, ovate, ſomewhat excavated at the tip. *Stam.* Filaments three, awl-shaped, erect, as long as the corolla; anthers broad, with a tranſverſe furrow. *Piſt.* Germen oval; ſtyle as long as the ſtamens; ſigma obtuſe. *Peric.* Capſules three, elliptical, compressed, large, with two-valved cells; valves keeled and compressed. *Seeds* five in each capſule, oblong, with a membranaceous wing.

Eff. Ch. Calyx in five ſegments. Petals five. Neſtary ſheſhy, bearing the ſtamens. Capſules three, obcordate or elliptic, gaping in the middle.

Profeſſor Vahl has deſcribed eight ſpecies of this genus in his *Enumeratio Plantarum*, though Linnæus was only acquainted with *Hippocratea volubilis*, but as this is a genus very little known, and curious for being triandrous in a natural order that has uſually eight or ten ſtamens, we are induced to give an abſtract of all the ſpecies found in the former author, following the profeſſor's arrangement.

1. *H. obcordata*. Vahl. Enum. n. 1. (*H. scandens*; Jacq. Amer. 9. t. 9.)—"Leaves ovato-lanceolate, ferrated. Capſules obcordate."—Native of South America. It flowers in April and December, and bears fruit in July.—*Branches* purpliſh. *Leaves* from one to three inches long, and little more than an inch broad, rounded at the baſe, a little pointed, entire in the lower part. *Stipula* ſolitary, mi-

nute; setaceous, placed in the axils of the leaves. *Flowers* inodorous, yellowish-green. *Seeds* brown.

2. *H. ovata*. Vahl. n. 2. (*H. volubilis*; Linn. Syst. Veg. 83.)—"Leaves oblong or ovate, lanceolate or elliptic, serrated. Capsules oval."—A native of South America.—*Leaves* two or three inches long, obtuse at each end, smooth above; their stalks purplish, channelled above. Branches of the *panicle* divaricated, and, like the flowers, slightly ferruginous and downy. *Capsules* about two inches long, scarcely an inch broad, very obtuse, seldom emarginate.

3. *H. lewigata*. Vahl. n. 3.—"Leaves ovate-oblong, slightly crenate."—Native of Cayenne.—*Branches* slightly ferruginous and downy. *Leaves* three inches long, rather obtuse, shining, of a reddish-brown underneath, gracefully veined; stalks purplish, smooth. The partial flower-stalks two, at the divisions of the *panicle*. Inflorescence very similar to that of the last species.

4. *H. viridis*. Vahl. n. 4. Fl. Peruv. v. 1. 44. t. 74. f. a.—"Leaves ovate, obtusely pointed, serrated and entire. Foot-stalks shorter than the leaves. Capsules oval, emarginate."—Found in groves upon the Andes.—Whole plant smooth. *Branches* forked. *Leaves* spreading, sometimes oblong, somewhat leathery, smooth above; leaf-stalks twisted, short. *Bractees* ovate, acute, hollow. *Flowers* yellow. *Stamens* united into a sort of cup, which includes the germen; anthers gaping at the top. *Germen* obovate, triangular. *Style* three-furrowed at the top; stigma triangular. *Capsules* an inch long.

5. *H. differma*. Vahl. n. 5. (*H. indica*; Willd. Sp. Pl. v. 1. 193.)—"Leaves elliptical, pointed, minutely serrated. Capsules lanceolate, with two seeds, obtuse at each end."—Native of the East Indies.—Whole plant smooth. *Branches* round. *Leaves* two inches long, slightly serrated towards the end, acute, sometimes rather obtuse, membranaceous, pale green, a little nerve on the upper side. *Panicles* shorter than the leaves. *Flowers* smooth. *Capsules* an inch long, striated, gaping in the middle.

A variety, β , of this species, called by Vahl *Euonymoides*, is described by that author "with oblong or obovate leaves, entire or emarginate at the top." This variety differs in having the branches more remote, and its leaves three or four times as small as in the original; there are also fewer flowers in the panicles.

6. *H. paniculata*. Vahl. n. 6.—"Leaves oblong, acute at each end, obtusely serrated."—Found at Sierra Leone, and described by Vahl from a specimen in the Herbarium of Jussieu.—*Branches* shining, much spreading, extended at the joints, compressed at the top. *Leaves* three or four inches long, membranaceous, pale green. *Flower-stalks* half as long as the leaves. Its fruit is not known.

7. *H. macrophylla*. Vahl. n. 7.—"Leaves oblong, pointed, entire, shining, obtuse at the base."—This, like the last, is a native of Africa, and preserved in the collection of Jussieu.—*Leaves* five or six inches long, a little acuminate, membranaceous, pale green, shining above. The fruit has not been seen.

8. *H. comosa*. Vahl. n. 8. Swartz. Prod. 17. Ind. Occ. v. 1. 77.—(Bejuco; Læfl. It. 314.)—"Leaves somewhat heart-shaped or ovate, pointed, entire. Peduncles much-branched, capillary. Capsules oblong or obovate."—Native of woods in the interior of Hispaniola, flowering in February and perfecting fruit in the middle of summer. The natives of St. Domingo call it *Amandier des Bois*. *Stem* climbing to a considerable height. *Branches* divaricated, reflexed, pendulous. *Leaves* opposite, entire, smooth on both sides, having shortish, round footstalks. *Panicles* terminal, repeatedly subdivided, bearing numerous, single-flowered, white pedun-

cles. *Flowers* polygamous, most of them barren. *Petals* oblong, obtuse, white, persistent. *Filaments* inserted into the interior margin of the nectary. *Capsules* slightly striated, of two valves, gaping in the middle. *Nuts* four, oblong, angulated, at first soft, but growing harder as they ripen, winged at the side and top; kernels sweetish and oily.

The general habit of this genus is climbing, with very spreading branches, round and smooth in the lower part, and somewhat square at the upper. Leaves opposite, and foot-stalks, smooth on both sides. Panicles axillary and terminal, opposite, dichotomous. Flowers small. Capsules smooth.

HIPPOCRATES, in *Biography*, the most distinguished of the ancient physicians, and usually called the *father of physic*, was born in the island of Cos, in the first year of the 80th Olympiad, or about 460 years before Christ. He was of the family of the *Asclepiades*, *i. e.* the descendants of *Æsculapius*; his father, *Heraclides*, being the seventeenth lineal descendant from that personage, and the sixteenth from *Podalirius*, who, with his brother, *Machaon*, followed the army of the Greeks, in the Trojan war, according to *Homer*. In this family the profession of physic had been hereditarily followed from *Æsculapius* downwards, and under their direction the Coan school attained its high degree of eminence. His maternal ancestry was also honourable; his mother, *Phenarete*, being reputed the 18th lineal descendant from *Hercules*. Born under these favourable circumstances, surrounded from his infancy with all the objects of his studies, and aided by the collective knowledge, as well as incited to research by the fame of his ancestors, *Hippocrates* devoted himself zealously to the cultivation of the art, which he was destined to refine and improve. Not content with adopting the empirical practice which was hereditary in his family, he studied medicine under *Herodicus*, who had invented the gymnastic medicine, and was instructed in philosophy and eloquence by *Gorgias*, a celebrated sophist, and brother of the physician just mentioned. He is said also to have been a pupil of *Democritus*, (*Celsus*, lib. i. præf.) which, however, is considered as improbable; and to have been a follower of the doctrines of *Heraclitus*. In whatever study he engaged, however, he appears to have been a true eclectic, to have thought for himself, and to have adopted only those principles which appeared to be founded in sound reason. Thus, while he elucidated the empirical doctrines handed down to him by the light of philosophy, he corrected, or rather rejected, the false theories with which the philosophers, who had no practical knowledge of diseases, had loaded the science of medicine, and brought it into the true path of observation, under the direction of reason, that is, of a rational experience. Hence he is said to have been the first who separated the science of medicine from philosophy, or rather from mere speculation, which then assumed that name. ("Hippocrates Cous primus quidem, ex omnibus memoriarum dignis, ab studio sapientiarum disciplinam hanc (scilicet medicinam) separavit, vir et arte et facundia insignis." *Celsus*, loc. cit.) For he considered philosophy and medicine as mutual aids to each other, and the proper union of the two as conferring a god-like qualification on man: "ιστορος γὰρ φιλοσοφίας ισόθεος." (*Lib. De decenti ornatu*.) Hence the physicians of the rational or dogmatic sect (so called in opposition to the empiric sect) always acknowledged *Hippocrates* as their leader, being the first who combined reasoning with experience.

Of the events of his life little is known with certainty: for of those that are recorded, some have a fabulous appearance, and some are actually inconsistent with our knowledge of history. It is certain, that, after the manner of those times, he spent the greater part of his life in travelling; re-

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fiding, however, for a considerable period, at various places, in which he was occupied in the practice of his art. In this way he visited the greater part of Greece and Asia Minor; but it appears from his writings that his chief abode was in the provinces of Thessaly and Thrace, especially at Larissa, the chief city of the former, where he composed several books. Almost all the cases of disease, which are well described in his books "on epidemical disorders," occurred during his practice in these provinces. According to Soranus, he spent some time at the court of Macedon, where he signalized himself, in consultation with Eurypnon, a senior physician, by detecting the origin of the malady of the young Perdiccas. His observation of the emotion of the prince on the appearance of Phila, a mistress of his father, led him to pronounce that love alone was capable of curing the disease which it had occasioned. His fame caused him to receive invitations from different cities of Greece. He is said to have been requested by the inhabitants of Abdera to go and cure their celebrated fellow-citizen, Democritus, of the madness under which they supposed him to labour. The alleged letter of the Abderites on this occasion is still preserved. On visiting the philosopher, Hippocrates pronounced him not mad; but, on the contrary, the wisest man in their city. A speech ascribed to his son Thesalus is also extant, in which the services of Hippocrates to the Athenians are enumerated. It is here said, that Illyria and Pæonia being ravaged by the plague, the inhabitants of those countries offered large sums of money to induce Hippocrates to come to their relief; but that certain winds which at that time prevailed, led him to foresee that the pestilence was likely to penetrate into Greece; he, therefore, refused to quit his own country, but sent his two sons, and his son-in-law, through the different provinces, to convey the proper instructions for avoiding the infection; he himself went to Thessaly, and thence to Athens, where he conferred such eminent services on the citizens, that they issued a decree honouring him with a crown of gold, and initiating him and his family in the sacred mysteries of Ceres and Proserpine. Hippocrates is likewise reported to have refused an invitation from Artaxerxes, king of Persia, accompanied by a promise of every reward and honour which he might desire, to repair to his dominions during a season of pestilence. The letters alleged to have passed on this occasion are extant, in one of which Hippocrates replies, that "he has food, clothing, and a habitation, in his own country; that it would be unworthy of him to aspire to the wealth and grandeur of the Persians, or to cure barbarians who were the enemies of Greece." The enraged king ordered the inhabitants of Cos to deliver up Hippocrates, or to expect the terrors of his vengeance: but the islanders declared their resolution to defend the life and liberty of their valued countryman at all hazards, and nothing was attempted by the Persian. Most of these stories, however, are deemed fictitious by the most intelligent critics. The cure of the young Perdiccas probably originated from the report of a similar cure ascribed to ERASISTRATUS (which see); and the interview with Democritus is not supported by any satisfactory evidence. The relation of the services of Hippocrates, during the plague at Athens, is altogether irreconcilable with the accounts of Galen and of Thucydides: the latter of whom is silent as to the name of Hippocrates, and affirms that the disease was unchecked, and that the physicians were its first victims. Besides, that plague commenced during the Peloponnesian war, in the 2d year of the 87th Olympiad, at which time Hippocrates was about thirty years old, and therefore could not have had two sons or a son-in-law in a condition to practise. It is supposed by M. Le Clerc, that Aëtius ascribed to Hippo-

crates the operations during the plague at Athens, which Plutarch, with more appearance of truth, imputed to Acron of Agrigentum (see ACRON); and Dr. Ackermann justly conjectures, that these fables were all invented after the death of Hippocrates, and ascribed to him by the followers of the Dogmatic sect, of which, as we have already observed, he was regarded as the founder. (See Fabric. Biblioth. Græca. tom. ii. p. 512. edit. Harles.) The letters and other pieces, which are preserved with the works of Hippocrates, under the title of τὰ ἔξωτὰ, and on the authority of which these anecdotes are related, are generally deemed spurious.

After a long life spent in the successful practice of his art, in perfecting his rational system of medical inquiry, and in forming disciples worthy to supply his place, Hippocrates died at Larissa in Thessaly, at the age of 85, or 90, or, as others affirm, of 104, or even 109 years. He was buried between that city and Gyrtona. Besides two sons, Thesalus and Draco, both eminent practitioners, he left a daughter, married to his favourite pupil, Polybus, who arranged and published the works of his great master; he left also a number of disciples.

How dubious soever many of the circumstances of the life of Hippocrates may be, it is not questioned that he acquired a reputation, which has ranked him high among the great men of Greece, and which may be traced from age to age, from the time in which he flourished through all succeeding periods. He has not only passed, by almost universal consent, for the father of physic and the prince of physicians, but his opinions were every where respected as oracles, not only in the schools of medicine, but in the courts of law. Philosophers of every sect were eager to read, to quote, and to comment upon his writings. He has shared with Plato the title of *Divinus*; and not only statues, but temples were erected to his memory, and his altars were covered with incense, like those of Æsculapius himself. Indeed the qualifications and duties required in the character of the physician, were never more fully exemplified than in his conduct, or more eloquently described than by his pen. He had formed a very exalted notion of the dignity and usefulness of his profession, which is only lowered, he said, in the public estimation, by the ignorance of its professors; and he supported this dignity in his own person by the most rigid attention to the morality of private life, by great simplicity, candour, and benevolence in all his intercourse with the sick, and by unwearied zeal in investigating the nature and progress of diseases, and in administering to their cure. He is said to have admitted no one to his instructions without the solemnity of an oath, the form of which is transmitted to us among his writings. In this the most religious attention to the advantages of the sick, the strictest chastity, and inviolable secrecy, in regard to whatever it seems improper to divulge, are the principal points inculcated.

The books attributed to Hippocrates amount to seventy-two in number, of which, however, a considerable part are regarded as spurious; some containing opinions which were not prevalent till long after the age of Hippocrates, and some differing altogether in style and composition from the genuine writings of that master, which are composed in the Ionic dialect, and are distinguished by a remarkable conciseness, and, as it were, compression of language, which at times, indeed, borders upon obscurity. Some pieces have been obviously written after the commencement of the Christian era, and Galen affirms that several interpolations and alterations were made by Dioscorides and Artemidorus, surnamed Capito, in the time of Adrian. Polybus, the son-in-law of Hippocrates, who collected and edited his works, is believed to have written some of the pieces, and Thesalus and Draco,

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his sons, as well as Hippocrates III. and IV., his grandsons, are supposed to have written others, especially several of the books of "Epidemics." Again, Hippocrates, the first of the name, and grandfather of the great Hippocrates, is the reputed author of the treatises *Περὶ ἀγυμῶν* and *Περὶ ἀεθέρων*, as well as of that *Περὶ τέχνης*: while some essays have been ascribed to the physicians of the contemporary Cnidian school.

The following works are generally deemed original productions of Hippocrates, the Coan: namely, 1. The essay "On Air, Waters, and Soils;" 2. The first and third books of "Epidemics;" 3. The book "On Prognostics;" 4. The first and second books of "Predictions;" and 5. The books of "Aphorisms;" but the two last contain many interpolations by the two writers above mentioned, and others; 6. The treatise "On the Diet in Acute Diseases;" 7. That "On Wounds of the Head." Haller includes several more treatises in the list of genuine works of Hippocrates, which, however, have been disputed, even from ancient times; such as those "On the Nature of Man;" "On the Humours;" "On Fractures;" "On the Joints;" and one or two others. Upon this subject the reader will find ample information in the able and learned essay of Dr. Ackermann, on the life and writings of Hippocrates, printed in Fabricius's *Bibliotheca Græca*, (4th edit. by Harles) tom. ii. :—also in Haller's *Biblioth. Anat. Med. et Chirurg. Gælicke Hist. Med. Period. 5ta. Le Clerc. Hist. de la Médecine*, p. 1. liv. iii. chap. 30.

The prodigious degree of authority, so long attached to the writings of Hippocrates, has occasioned such a multitude of editions, versions, commentaries, dissertations, &c. that many pages would be required to enumerate them. Haller has bestowed much labour upon this object, and may be consulted by the curious. We must confine ourselves here to a cursory notice of the principal editions of the whole works.

The *Greek editions* are those of Aldus, at Venice, in 1526, folio; and of Frobenius at Basle, in 1538, folio.

The *Latin editions* are those of Cratander, at Basle, in 1526, folio, translated by several hands;—of M. F. Calous, at Rome, 1525 and 1549, translated from MSS. in the Vatican, by order of pope Clement VII. ;—of J. Cornarius, at Venice, in 1545, 8vo. whose version has been frequently reprinted; and the version of Anutius Foësius, at Francfort, 1596, 8vo. by Wechel.

The *Greek and Latin editions* are those of Hieronymus Mercurialis, at Venice, 1578, folio;—of Zwinger, with the version of Cornarius, at Basle, 1579, folio;—of Anutius Foësius, at Francfort, 1595, several times reprinted;—of J. A. Vander Linden, also with the Latin version of Cornarius, at Leyden, 1665, 2 vols. 8vo. reprinted at Venice, 1757, in 2 vols. 4to.;—of Rénatus Chartrier, together with the works of Galen, at Paris, in 14 vols. folio;—and of Steph. Mack, at Vienna, 1743, 1749, and 1759, 2 vols. folio.

Doctrines of Hippocrates.—To give a minute detail of the extent of the knowledge of Hippocrates in medicine, and in the collateral branches of anatomy, physiology, &c. as it may be collected from his various treatises, would be to write a volume on the subject. We must, therefore, limit ourselves to an outline of his general precepts, referring those of our readers, who may wish for a more ample view of them, to the works above-mentioned as genuine, or to the writers quoted in the course of this article. The anatomical knowledge of Hippocrates was necessarily limited by the prejudices of the times in which he lived, when the human body had never been dissected for the purposes of

anatomical enquiry; Erasistratus and Herophilus, as we have stated, were the first to whom this permission was given. His knowledge of the internal organs could only, therefore, be derived from accident, or a comparison with those of other animals. Hence, much of his physiological doctrines, and of his opinions respecting the causes and seats of disease, must necessarily be erroneous, and the whole extremely defective; especially, when to ignorance of anatomy, the general deficiency of the age, in regard to the properties of the external world, is added. But by unceasing observation of the phenomena of health and disease, Hippocrates in a great measure supplied the want of such knowledge; so that his pathology and principles of cure bear, in many instances, a surprising resemblance to those of our own times, notwithstanding our knowledge of the intimate structure of the human body, and the general improvements in the philosophy of nature.

Hippocrates considered the functions of the body as under the direction of an intelligent or instinctive principle, which he called *nature*. To this principle he ascribed the "distribution of the blood, the spirits, and heat, to the different parts of the body, which receive by these means life and feeling." (*Lib. de Alimento*.) "This faculty," he said, "nourishes, preserves, and causes the growth of all the parts." Its mode of operation he conceived to consist in attracting, preparing, or changing whatever was useful, and in rejecting whatever was injurious or superfluous, after having separated it from the useful; and this he supposed to be effected by a sort of affinity and repulsion in similar and dissimilar parts. This doctrine, under various modifications, has passed through all medical systems, differing in many instances only in the change of names; thus, in the "Nature" of Hippocrates, we see the "Archæus," the "vital principle," the "spirit of animation," the "*vis medicatrix nature*," of the most enlightened medical philosophers of later times. It is not easy to collect an accurate view of the anatomy of Hippocrates, since different statements on many points are to be found in different parts of the works ascribed to him; it is to be regretted, that the book written by Galen, "De Anatomia Hippocratis," is lost. With respect to the *brain*, it does not appear that Hippocrates had the least suspicion of its connection with sensibility and understanding; indeed, so far from considering it as the peculiar seat of the thinking faculty, he places this faculty in the left ventricle of the heart. (*Lib. De Corde*.) He considered the brain as a glandular body, from its texture, and as a receptacle of redundant moisture, collected by the condensation of hot vapours, which it discharges again in defluxions and catarrhs. (*Lib. De Glandulis*.) In describing the optic nerve, he represents it as a mere tube, through which the aqueous humour is distilled into the eye. But it should be observed, that the book *De Glandulis* is deemed spurious by Galen; and that, *De Corde*, in which the structure of the heart is rather minutely described, is neither mentioned by Erotian nor by Galen. The heart seems to have been regarded, at that time, as the organ for mixing with the blood some aerial principle, drawn from the lungs by its auricles, which are described as inflators, or bellows, calculated for that purpose. Indeed, whatever was known to the ancients in regard to the motion of the blood, seems to have consisted in some vague idea of regurgitation, or a certain flux and reflux, barely sufficient to prevent the stagnation of the contents of the vessels. The lungs were deemed by Hippocrates the absorbers and condensers of superfluous humours, and the moderators of internal heat; the liver, as the source of sanguification and of heat, in common with the other abdominal viscera. His physiology of generation indicated

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his imperfect knowledge of the organs concerned in that process; he had an extraordinary notion of the semen being prepared in the brain, and conveyed by the spinal marrow to the vessels provided for its reception. He appears to have had no accurate ideas of muscles or of muscular motion, though he was acquainted with the number, figure, and connection of the bones.

The fluids were divided by Hippocrates into the four humours, blood, phlegm, yellow, and black bile (*Lib. De Natura Hominis*); to which he ascribes peculiar properties of hot, cold, cold, dry, and moist, in different combinations. He considered health as the result of a due temperament and proportion of these several fluids, both in respect to quantity and quality; and looked for the source of disease in the excess, defect, or deprivation of any or all of these humours. He, likewise, included in his system an analogy or connection between the four humours and the four seasons of the year, as well as the four ages of man. Thus phlegm, which is the coldest humour, he believed to be increased during the winter and in old age; whence at those periods pituitous diseases were prevalent, such as expectorations, œdema, &c. In the spring, the blood begins to be redundant, especially in young people, who then suffer bleedings from the nose, dysentery, &c. As the summer and autumn advance, the disposition to bilious diseases augmented, bilious evacuations occur spontaneously, and are procured by medicine. We have seen how this doctrine, of the four humours, and four qualities, when extended to all the agents employed in medicine by Galen, became the prevalent code of physic for thirteen centuries; nor is it long since the relics of it yielded to the influence of experimental science. See *GALENICAL System*.

But it is chiefly in matters of fact and observation that succeeding ages were indebted to the genius of Hippocrates, and in which the influence of his authority is still extensively visible in the language of medical science. He divided the causes of diseases into external, including the influence of air, exercise, rest, sleep, and watching; and internal, comprehending the food, drink, secretions, retentions, and passions of the mind. He divided diseases themselves into *epidemic*, *endemic*, and *sporadic*, according to the present signification of those terms; and again into *acute* and *chronic*, limiting the former to the duration of fourteen days. He, likewise, divided the duration of an acute disease into four stages, the beginning, increase, height, and decline. It was in the third of these stages that he conceived the *concoction* of the morbid humours to be accomplished, and between this and the last stage, when he expected some indication from nature, by what outlet the morbid matter was to be expelled, which constituted the *crisis* of the disorder, and which he was careful not to interrupt. (See *CONCOCTION and CRISIS*.) These *critical* discharges and changes he was led, partly by experience, and partly by hypothesis, to expect on particular days; and many of his rules of prognosis in acute diseases, were built upon the observation of the changes of symptoms on such days. This doctrine, however, we have already discussed at length (see *CRITICAL Days*); and shall only remark, that the notion of a concoction and critical discharge of peccant matter, as the source of the phenomena of febrile and inflammatory diseases, continued, under some modifications, to be the leading feature in medical systems to the time of Hoffmann; that even Dr. Cullen did not altogether reject it; and that it still exists in popular language, and in vulgar medical opinions.

To the industry of Hippocrates we are indebted probably for an account of all diseases which came under his

inspection; and of the whole number, the greatest part are still characterized by the names invented or adopted by him, and not more than five or six of them appear to be extinguished or unknown. Le Clerc has occupied a long chapter in enumerating the diseases which still retain the appellations given them by the father of physic. (See *Hist. de la Médecine*, p. 1. liv. iii. chap. 8.; also, *Gælicke*, loc. cit. pp. 577—600.) But a distinguishing feature in the pathological talent of Hippocrates was his skill in diagnosis and prognosis; his singular and constant care in watching all the minute changes in disease, having obtained for him a critical knowledge of symptoms, which enabled him not only to discriminate one disease from another, but to foresee almost all their variations and terminations. On this point, Celsus admits that Hippocrates stood unrivalled by any of his successors: “*cum recentiores quoque medici, quamvis in curationibus mutarint, tamen hæc illum optime præfagisse fateantur.*” (*De Medicinâ*, lib. ii. *Præf.*) He carefully noticed a multitude of signs, which escaped the eye of superficial observers. In a number of little peculiarities of mind and body, in the position of the limbs, (see *DECUBITUS*), in the voluntary and involuntary motions, and the expressions of countenance, he shewed that indications of great importance might be discerned. But his most certain prognosis was founded on the nature of the secretions, and of the urinary and alvine discharges, the various appearances of which supplied him with such rational grounds of judgment, as succeeding investigation has scarcely been able to impeach. His books of “*Aphorisms*,” and “*Prognostics*,” contain the principal summary of his experience in symptomatology. The books of “*Predictions*,” however, and of “*Coan Prognostics*,” contain many erroneous precepts, whence Galen doubts their authenticity, and considers all that is valuable in them, as having been compiled from the two former books, and the books of “*Epidemics*.” It has been disputed among writers, whether Hippocrates had any knowledge of the pulse: and although the affirmative seems probable, it is obvious that he did not lay much stress upon it in forming his indications.

With respect to the practice of Hippocrates, the length, to which this article has already extended, compels us to be brief. It would appear, indeed, that he considered it to be the duty of a physician, rather to watch patiently the progress of the operations of the constitution, and to remove impediments and aid the salutary actions, than to excite any decided changes by the action of powerful medicines. His observations on the powers of nature, and on the wisdom of trusting to her efforts, in preference to the hasty, violent, or uncertain assistance of art, are frequently repeated. His general principles of cure are stated in the following axioms: “*that as contraries are cured by contraries, so cold is the remedy for heat, and heat for cold; evacuation will cure repletion, and repletion will repair the loss sustained from evacuation: that the art of medicine consists in supplying deficiencies and retrenching superfluities, in treating relaxation and contraction by their opposites, and in bringing back to their own channels fluids that are moving in improper courses.*” (See *Lib. de Prisca Medicinâ*, *De Natura Hominis*, *De Flatibus*, &c.) Their dependence on the curative powers of nature led Hippocrates and the ancients in general to commence their therapeutic operations by the regulation of diet alone, in which, indeed, their whole practice often consisted. In contemplating their plans on this subject, modern feelings, and especially those of Englishmen, are appalled at the discipline which they instituted: for in very acute diseases, they interdicted every kind of nutriment for the first three or four days; allowing only as much thin
drink

drink as was sufficient to moisten the parched throat, which was often administered on a small sponge, to prevent the thirsty patient from swallowing too copious a draught. During this period it was intended to leave the active powers of the constitution at full liberty to drive out or change all morbid matter. But if this effect did not follow, or if the strength of the patient failed in the trial, a more plentiful dilution was then allowed, with a beverage composed of eight parts of water, one of honey, and occasionally one of vinegar, sometimes enriched with the juice of acid fruits, cooling herbs, or some weak sharp wine: ptisan, or barley-water, was also a common beverage given by Hippocrates in acute diseases. This plan, when necessary, was generally continued till the fourteenth day, (the reputed commencement of the chronic term,) when a more substantial diet was allowed, though still without recourse to any medicine, except gentle emetics and laxatives, the former consisting generally of a decoction of hyssop with salt and vinegar, and the latter of expressed juice or decoction of common cabbage, or the herb mercury, or the more pleasant exhibition of whey a little salted. For the last mentioned purpose glysters of seawater, or of vetches boiled in milk with a little salt, were in common use.

When more powerful medicines became necessary, the ancients recurred to some of the most active purgatives hitherto discovered in the vegetable world; such as black and white hellebore, elaterium, colocynth, and scammony, which were frequently administered in quick succession: but these were never prescribed to children, old people, or pregnant women. Notwithstanding the caution, however, with which these drastic medicines were given, it would seem that the most serious mischief sometimes ensued from their excessive operation; as Hippocrates mentions, among his aphorisms, that "convulsions after taking hellebore are fatal." In order to excite perspiration, he used every external means of increasing heat, such as warming the room, covering the patient, pouring hot water on the head and limbs, with a free internal use of heated liquors, and often of pure wine. And to increase the urine, he gave garlic, cucumbers, melons, celery, fennel, and other strong flavoured herbs.

Hippocrates did not, however, exclusively confine himself to the administration of internal remedies, and the regulation of diet; he resorted to external means of cure, in some of which he appears to have exceeded the bounds of modern activity, as far as he fell short of them, in merely watching the efforts of the constitution in other cases. He employed blood-letting (an operation, the origin of which is concealed by the remoteness of its antiquity) with great freedom. In extreme cases of pain or inflammation, it was his custom to open at once the veins of both arms, and let the blood flow till the patient fainted. He often likewise drew blood copiously from the legs and feet, to relieve complaints of the head and upper parts of the body, by large and deep incisions with the knife, which he then covered with copper or other metallic vessels, exhausted of their air by fire, resembling the cupping glasses of our own times. He seems, indeed, to have entertained many singular notions of the revulsion, which might thus be produced. For example, he recommends bleeding in the forehead for a head-ache in the occiput; and in order to restrain the catamenia, when excessive, he applied large cupping vessels to the mammæ. (Aph. sect. v. 60. and 68.) He laid down a maxim, which forms a contrast with the inertness of some of his precepts, that "those diseases, which medicines will not cure, yield to the knife; and those which the knife will not cure, may be removed by fire; but where this last and most powerful remedy fails, the malady must be deemed incurable." (Aph.

§ viii. 6.) Accordingly in obstinate chronic cases, the local bleedings above-mentioned were commonly succeeded by the actual cautery, which produced large and long continued discharges from the head, neck, breast, side, limbs, or other parts, to which the burning was freely applied. Nor did he even spare the bones, which he burnt, sawed, and perforated without scruple; and he used the trepan itself in cases of violent head-ache. It appears, as well from these operations, as from his rational directions for the treatment of fractures and dislocations, and the frequent cautions that he gives respecting the danger and difficulty attending wounds and bruises in nervous or tendinous parts, that Hippocrates combined the practice of surgery with that of medicine. But it would seem that he thought the difficult operations of surgery should be performed only by those, who, by confining their professional employment to this exercise alone, had attained a peculiar dexterity of hand; for he enjoins his disciples, even in their inaugural oath, to forbear from performing the operation of lithotomy.

These operations, as well as the number of medicines mentioned by Hippocrates, imply a considerable previous advancement both in internal and manual medicine. Le Clerc has enumerated upwards of three hundred articles of diet and the materia medica, which were employed by him, from the animal, vegetable, and mineral kingdoms. Among these are various preparations of iron, copper, lead, and silver, alum, nitre, vitriol, &c. Narcotics are mentioned by Hippocrates, and were certainly used in ancient times; but he seems to have been cautious in administering them, and it is even a matter of dispute whether he ever employed opium, the most potent and useful of the whole class. Among the articles of diet, Hippocrates is careful to mention the properties of the flesh of the dog, fox, horse, and ass, which implies that these viands were then in use, at least among the people.

We shall conclude this account of Hippocrates, with the brief and philosophical view of the science of medicine, exhibited in his first Aphorism, which in the terseness of its expression cannot be imitated in a modern language. It contrasts the brevity of human life with the long experience necessary to the cultivation of the art of medicine; and reminds us of the difficulty of obtaining that solid experience in an art where opportunity is transient, where experiment itself is often hazardous and deceptive, and the inferences of the judgment, therefore, extremely difficult. "Vita brevis, ars longa, occasio celeris, experimentum lubricum, judicium difficile." See Le Clerc, Gælicke, and Fabricius, as above quoted; also the works of Hippocrates, Vita Hipp. à Sorano, Walker's Memoirs of Medicine. General Biog.

HIPPOCRATES'S *Sleeve*, *manica Hippocratis*; a kind of filtre, or straining-bag, formed by joining the opposite angles of a square piece of flannel, in form of a pyramid, and used to percolate or strain syrups, decoctions, &c. for clarification.

HIPPOCRATIA, in *Antiquity*, feasts celebrated by the Arcadians in honour of the equestrian Neptune, from a notion that the deity conferred horses on men. During the celebration of them, horses were exempted from all labour, and were led in procession through the streets, superbly harnessed, and adorned with garlands of flowers. The Romans celebrated those feasts under the title of CONSUALIA.

HIPPOCRATICA FACIES. See FACIES Hippocratica.

HIPPOCRENE, derived from ἵππος, horse, and κρηνη, fountain, q. d. the fountain of the horse Pegasus, was a spring at the foot of mount Helicon, supposed to spring up upon Pegasus's

Hegafus's striking his foot against the mountain. See HELICON and AGANIPPE.

HIPPOCREPIS, in *Botany*, is derived from ἵππε κρηπίς, a horse-shoe, in allusion to the particular conformation of its legumes, or rather the parts of its legumes, which resemble as it were a connected series of horse-shoes. Few genera possess so decided and perceptible a character as this, by which it may be at once known, the horse-shoe appearance of its fruit being so striking, that no doubt can exist respecting any of the plants, which constitute the genus before us. Linn. Gen. 381. Schreb. 503. Willd. Sp. Pl. v. 3. 1158. Mart. Mill. Dict. v. 2. Sm. Fl. Brit. v. 2. 777. Ait. Hort. Kew. v. 3. 60. Juss. 361. Lamarck Dict. v. 3. 131. Illustr. t. 630. (Ferrum equinum; Tourn. t. 225.)—Class and order, *Diadelphia Decandria*. Nat. Ord. *Papilionaceae*, Linn. *Leguminosae*, Juss.

Gen. Ch. *Cal.* Perianth of one leaf, permanent, five-toothed; the two upper teeth united or less divided. *Cor.* papilionaceous. Standard heart-shaped, with a claw the length of the calyx. Wings ovate-oblong, obtuse. Keel lunulate, compressed. *Stam.* Filaments diadelphous (simple and nine-cleft) ascending; anthers simple. *Pist.* Germen slender, oblong, terminating in an awl-shaped, ascending style; stigma perfectly simple. *Peric.* Legume compressed and membranaceous, very long, curved inwards, cut from the lower suture almost to the upper into several roundish sinuses, so as to consist of several bluntly triangular joints, connected by the upper suture. *Seeds* solitary in each joint, oblong, incurved.

Eff. Ch. Legume jointed, compressed, curved, with many deep sinuses, in one of its edges.

1. *H. unifiliquosa*. Single-legged Horse-shoe Vetch.—Linn. Sp. Pl. 1049. (Ferrum equinum vulgare; Column. Echpr. t. 300.)—"Legumes sessile, solitary, straight."—Native of Italy and Switzerland, where it flowers in June and July. *Root* simple, annual. *Stems* several, simple, various in length, the long linear cotyledons often remaining at their base. *Leaves* alternate, of about five pair of emarginate leaflets, and an odd one, nearly smooth and somewhat glaucous. *Flowers* axillary, solitary, nearly sessile, small, pale yellow. *Legumes* spreading, an inch and half long, frequently with bristly tufts at the back, where every seed is lodged, their sides curiously veined and striated. An excellent figure of this species, under the name of *Ferrum equinum*, may be seen in Gerarde's Herbal. 1235, also in Rivinus, Pentap. Irreg. t. 97. f. 1.

2. *H. multifiliquosa*. Many-legged Horse-shoe Vetch.—Linn. Sp. Pl. 1050. Villars Dauph. v. 3. 400. (Ferrum equinum alterum πολυκρηπιον; Column. Echpr. t. 300.)—"Legumes stalked, crowded, circular."—Native of a chalky soil in the south of France, Spain, and Italy, flowering in July and August.—This is also annual, and very closely allied in habit to the last. *Stem* simple, furrowed. *Leaves* alternate, of about five pair of emarginate leaflets, and an odd one, smooth, bright green. *Flowers*, axillary, yellow, many-clustered, upon long peduncles. *Legumes* curved, sometimes so much as to form a circle.

3. *H. balearica*. Shrubby Horse-shoe Vetch—Willd. n. 3. Jacq. Ic. Bar. t. 149. Curt. Mag. t. 427.—"Legume pedunculated, crowded, smooth, lobed only in the outer margin."—Native of Minorca, flowering in May and June. *Root* woody, sending forth ascending branches. *Leaves* pinnate, smooth, of about eight pair of ovate-linear leaflets, with an odd one. *Peduncles* very long, terminated by an umbel of many yellow flowers, which have a faint, sweet smell. *Legume* oblong, obtuse, straightish, or a little curved, sinuated

twice or thrice on the upper suture, smooth and brownish furnished with shining, round, brown seeds.

4. *H. comosa*. Tufted Horse-shoe Vetch.—Linn. Sp. Pl. 1050. Sm. Fl. Brit. v. 2. 777. Engl. Bot. t. 31.—"Legumes pedunculated, clustered, curved, waved in the external margin."—Found on dry chalky banks in Kent, Cambridgeshire, and other parts of England, bearing flowers from May to August. This is rather a scarce perennial, with a woody root and smooth herbage. *Stems* prostrate, furrowed. *Leaves* pinnate, of numerous obovate emarginate leaflets, with an odd one. *Stipules* lanceolate. *Peduncles* axillary, very long; partial-stalks short, hairy. *Flowers* yellow. *Legumes* recurved, rough with little glands. *Seeds* kidney-shaped.

5. *H. barbata*. Bearded Horse-shoe Vetch.—Loureir. Cochinch. v. 2. 453.—"Legume pedunculated, straight, spike of flowers oblong, terminal."—Native of fields in Cochinchina.—*Stem* somewhat shrubby, four feet high, erect, round. *Leaves* ovate, entire, smooth, ternate, the middle leaflet larger. *Flowers* purple. *Legume* barbed, mostly on the exterior suture, and deeply emarginate. *Seeds* angularly kidney-shaped, small, compressed.—This species has not yet been introduced into Europe. We know it only from Loureiro.

HIPPODROME, **HIPPODROMUS**, composed of ἵππος, horse, and δρομος, course, of the verb δρῶμαι, curro, I run, in Antiquity, a list, or course, wherein chariot and horse-races were performed, and horses exercised.

The Olympian hippodrome, or horse-course, was a space of ground of 600 paces long, surrounded with a wall, near the city Elis, and on the banks of the river Alpheus. It was uneven, and in some degree irregular, on account of the situation; in one part was a hill of moderate height, and the circuit was adorned with temples, altars, and other embellishments. (See STADIUM.) Pausanias (l. vi.) has given us the following account of this hippodrome, or horse-course: As you pass out of the stadium, by the seat of the Hellenodics, into the place appointed for the horse-races, you come to the barrier (Ἀφῆται) where the horses and chariots rendezvous before they enter into the course. This barrier, in its figure, resembles the prow of a ship, with the rostrum or beak turned towards the course. The other end, which joins on to the portico of Agaptus (so called from him who built it), is very broad. At the extremity of the rostrum or beak, over a bar that runs across the entrance (ἑπι κλεινοῦ), is placed a figure of a dolphin in brass. (This dolphin is a symbol of Neptune, surnamed Hippias or Equestris, for his having produced a horse by striking the earth with his trident, according to the fable; without the recollection of which circumstance the reader might be surprized to meet with the figure of a dolphin in a horse-course.) On the two sides of the barrier, each of which is above 400 feet in length, are built stands or lodges, as well for the riding-horses as the chariots, which are distributed by lot among the competitors in those races; and before all these lodges is stretched a cable, from one end to the other, to serve the purpose of a barrier. About the middle of the prow is erected an altar, built of unburnt brick, which every Olympiad is plastered over with fresh mortar; and upon the altar stands a brazen eagle, which spreads out its wings to a great length. This eagle, by means of a machine which is put in motion by the president of the horse-races; is made to mount up at once to such a height in the air, as to become visible to all the spectators; and at the same time, the brazen dolphin before-mentioned sinks to the ground. Upon that signal the cables, stretched before the lodges on either side of the portico of Agaptus,

Agaptus, are first let loose, and the horses there stationed move out and advance till they come over against the lodges of those who drew the second lot, which are then likewise opened. The same order is observed by all the rest, and in this manner they proceed through the beak or rostrum; before which they are drawn up in one line, or front, ready to begin the race, and make trial of the skill of the charioteers and fleetness of the horses. (See CHARIOT.) On that side of the course, which is formed by a terrace raised with earth, and which is the largest of the two sides, near to the passage that leads out of the course across the terrace, stands an altar of a round figure, dedicated to TARAXIPPUS, the terror of the horses, as his name imports. The other side of the course is formed, not by a terrace of earth, but a hill of moderate height, at the end of which is erected a temple, consecrated to Ceres Chamyne, whose priests has the privilege of seeing the Olympic games.

There is a very famous hippodrome at Constantinople, which was begun by Alexander Severus, and finished by Constantine. This circus, called by the Turks *atmeidan*, is 400 paces long, and above 100 paces wide, *i. e.* geometrical paces of five feet each. Wheeler says it was in length about 550 ordinary paces, and in breadth about 120; or, allowing each pace to be five feet, 2750 feet long and 600 broad. At the entrance of the hippodrome there is a pyramidal obelisk of granite, in one piece, about 50 feet high, terminating in a point, and charged with hieroglyphics erected on a pedestal of eight or ten feet above the ground. The Greek and Latin inscriptions on its base shew that it was erected by Theodosius; the machines that were employed to raise it were represented upon it in basso relievo. See CIRCUS.

The beauty of the hippodrome at Constantinople has been long since defaced by the rude hands of the Turkish conquerors; but under the similar appellation of *atmeidan*, it still serves as a place of exercise for their horses. Whether the Olympic hippodrome was so long or so wide as this of Constantinople, it is not now easy to determine; but it must evidently have been considerably longer than an ordinary stadium, in order to allow for the turnings of the chariots and horses round the pillars which served as metas or goals, without running against them, or against one another. The length of the course, or the distance between the two metas or goals, is not easily ascertained. It is probable, however, that the two pillars, *viz.* that from which the horses started, and that round which they turned, which divided the course into two equal lengths, were two stadia distant from each other; consequently, the whole length of the race, for a chariot drawn by full aged horses, consisting of 12 rounds, amounted to 48 stadia, or six Grecian miles; and that of the chariot drawn by colts consisted of eight rounds or 32 stadia, or four Grecian miles; a Grecian mile, according to Arbuthnot's computation, being somewhat more than 800 paces, whereas an English mile is equal to 1056. Pausanias informs us, that in the Olympic hippodrome, near that pillar called *Nysé*, probably that which was erected at the lower end of the course, stood a brazen statue of Hippodamia, holding in her hand a sacred fillet or diadem, prepared to bind the head of Pelops for his victory over Oenomaus; and it is probable that the whole space between the pillars was filled with statues or altars, as that in the hippodrome at Constantinople seems to have been. Here, however, stood the tripod, or table, on which were placed the olive-crowns and the branches of palm destined for the victors. Besides the hippodromes at Olympia and Constantinople, there were courses of a similar kind at Carthage, Alexandria in Egypt, and other places.

We have some vestiges in England of the hippodromus,

in which the ancient inhabitants of this country performed their races. The most remarkable is that near Stone-henge, which is a long tract of ground, about 350 feet, or 200 druid cubits wide, and more than a mile and three quarters, or 6000 druid cubits in length, inclosed quite round with a bank of earth, extending directly east and west. The goal and career are at the east end. The goal is a high bank of earth, raised with a slope inwards, on which the judges are supposed to have sat. The metas are two tumuli, or small barrows, at the west end of the course. These hippodromes were called, in the language of the country, *rbedagua*, the racer *rbedagor*, and the carriage *rbeda*, from the British word *rbedeg*, to run. One of these hippodromes, about half a mile to the southward of Leicester, retains evident traces of the old name *rbedagua*, in the corrupted one of *rawdikes*. There is another of these, says Dr. Stukeley, near Dorchester; another on the banks of the river Lowther, near Penrith in Cumberland; and another in the valley, just without the town of Royston.

HIPPODROMUS, in *Chronology*, the Bœotian name for the Athenian month Hecatombæon, or Ecatombæon.

HIPPOGLOSSUM, HORSE-TONGUE, in *Botany*, the name of a plant of the *rufcus*, or butcher's broom kind, called by others the Alexandrian bay, or *laurus Alexandrina*.

HIPPOGLOSSUS, in *Ichthyology*, *Holbut*, a species of PLEURONECTES, which see.

HIPPOLAPATHUM, in *Botany*, a species of lapathum, called also monk's rhubarb.

HIPPOLAUS, in *Ancient Geography*, a promontory of European Scythia, which was a tongue of land between the mouth of the Borythenes and that of Hypanis. Herodotus says, that here was a temple dedicated to Ceres.

HIPPOLITHOS, a name given by some authors to the stones found in the stomachs and intestines of horses; there are often a great number of these in one horse; and they are frequently found in the colon of a very large size. See BEZOAR.

HIPPOLYTUS, ST. in *Biography*, a Christian bishop and martyr, in the third century, was the disciple of Irenæus, and the instructor of Origen. He is celebrated for his zeal and labours in preaching the gospel, and in defending the Christian religion. The seat of his principal labours was at Rome, where it is probable he suffered martyrdom. This event took place in the year 230, under the emperor Alexander Severus. Some, however, ascribe it to the persecution under Maximinus, five years later; and there are others who contend that it did not occur till the Decian persecution, about the year 250. He was held in high estimation for his piety and learning; and he was author of a number of works on a variety of subjects. Of his great fame, a noble monument erected to his honour near Rome affords some proof. This monument consists of a marble statue, representing a venerable person sitting in a chair, on the sides of which are engraved, in Greek letters, cycles of 16 years, forming the most ancient paschal canon in existence. It was published in Greek by Joseph Scaliger, with commentaries, in 1595, and afterwards in Latin, by father Giles Bucher in 1694. Hippolytus was author of many other works; but some given to him are unquestionably spurious. Dr. Lardner has investigated their authenticity, and having so done he adds, "If I may at last deliver my own opinion, I would say, though scarcely any of them are altogether sincere and uncorrupted, there are few of which some good use may not be made by a man of candour and judgment." Lardner's Credibility.

HIPPOMANE, in *Botany*, an ancient Greek name adopted by Linnæus for an American genus to which it

could not possibly originally belong, but whose qualities perhaps may excuse its application. The word is constructed of *ἵππος*, a horse, and *μανία*, madness, the ancient plant being of so virulent a nature as to bring madness upon such animals, if they happened to partake of it.—The genus in question is not behind-hand with any plant in noxious qualities.—Linn. Gen. 205. Schreb. 659. Swartz. Obs. Bot. 369. Willd. Sp. Pl. v. 4. 571. Mart. Mill. Dict. v. 2. Ait. Hort. Kew. v. 3. 378. Juss. 391. Lamarck Illustr. t. 793. (Manzanilla; Plum. Nov. Gen. 50.)—Class and order, *Monacia Monadelphica*. Nat. Ord. *Tricocca*, Linn. *Euphorbia*, Juss.

Gen. Ch. Male-flowers in a terminal catkin. *Cal.* Perianth of one leaf, bifid, turbinate, obtuse, very small. *Cor.* None. *Stam.* A single thread-shaped filament, twice the length of the calyx; anthers four, roundish, affixed crosswise to the sides of the filament towards the top. Female-flower solitary, terminal. *Cal.* Perianth withering, of three roundish, concave, obtuse converging leaves. *Cor.* None. *Pist.* Germen ovate, large; style very short; stigma about seven-cleft, acute, reflexed. *Peric.* Drupa globular, very large, one-celled, crowned with the permanent stigma. *Seed.* Nut woody, irregular, acuminated, excavated with little pits and accompanied by appendages, of seven cells and seven valves; kernels solitary, roundish.

Eff. Ch. Male, a catkin. Perianth two-cleft. Corolla None. Female, Perianth three-cleft. Corolla None. Stigma seven-cleft. Drupa with a nut of seven cells.

1. *H. Mancinella*. Linn. Sp. Pl. 1451. Jacq. Amer. 250. t. 159. (*Juglandi affinis arbor julitera lactescens venenata pyrifolia*, Manzanilla Hispanis dicta; Sloan. Jam. v. 2. t. 159.)—Leaves ovate, serrated, with one gland at the base; stalks half as long as the leaves.—Native of sandy, watery places near the coast in various parts of the West Indies.—This is a tall and spreading tree, of handsome appearance, compared by Jacquin to a Pear-tree. Every part, when wounded, exudes a plentiful, very white, but highly caustic and venomous milk, raising blisters on the skin like a burn, nor can scarcely any part of the plant be touched with safety. It is reported, that many of the Europeans who first landed at Surinam died suddenly from sleeping under this tree. Jacquin says, that some kind of Land-Crabs become poisonous food from eating the fruit, which is by no means wonderful. The wood, however, is valued for being capable of taking a high polish, and being beautifully variegated with several dark colours. The Leaves are scattered, ovate, acute, with shallow serratures, smooth, veiny, about two inches long, on stalks not quite so long, which are slender and smooth, crowned where they enter the base of the leaf with one, round, depressed gland. The male Catkins grow at the end of the branches and are of a yellowish-green colour. Female-flowers at the division of the twigs, solitary, round and green. Fruit the size of a walnut without the coat, of a yellowish-green, resembling a crab-apple in size and smell; the coat is very thin, and nut large. Sloane says, that goats are very fond of the fruit, which does not render either their flesh or their milk poisonous.

It is necessary to observe, that *Hippomane biglandulosa* of the *Plante Surinamenses*, n. 129, *Amen. Acad.* v. 8. 263, appears by the Linnæan Herbarium to be a totally different plant from that originally so called by Linnæus, as well as from the above described. Its leaves are like those of *Magnolia grandiflora*, but we have not materials to determine its genus. Linnæus says, the fruit is tricoccus; if so, it may belong to the genus *Sapium* of Jacquin, Willd. v. 4. 572, to which the other Linnæan species of *Hippomane* are now re-

ferred. If they remain so, the specific character of the *Mancinella* becomes superfluous.

HIPPOMANES, compounded of *ἵππος*, horse, and *μανία*, madness, a sort of poison, famous among the ancients as an ingredient in amorous philtres, or charms.

Naturalists are not agreed about the nature of the hippomanes. Pliny describes it as a blackish caruncle, found on the head of a new-foaled colt; which the dam bites off and eats as soon as she is delivered. He adds, that if she be prevented herein by any other's cutting it off before, she will not take to, nor bring up her young.

Virgil, and after him Servius and Columella, describe it as a poisonous matter trickling from the pudendum of a mare, when proud, or longing for the horse. *Æn.* lib. iv. ver. 515.

At the end of Mr. Bayle's Dictionary is a very learned dissertation on the hippomanes; and all its virtues, both real and pretended.

HIPPOMYREX, the horse ant, the name of a species of ant much larger and nimbler than the common kind. This builds in woods, and makes its nests of sticks and straws, and fragments of various parts of trees. The common ant builds only with earth.

HIPPONE, in *Mythology*, the goddess of horses and chariots.

HIPPONESUS, in *Ancient Geography*, a town of Asia, in Caria.—Also, a town of Libya.

HIPPONIATES SINUS, a gulf of the Tyrrhenian sea, on the western coast of the kingdom of Naples.

HIPPONITES, a lake of Africa, on the banks of which was built the town of Hippo-Zarytus.

HIPPONIUM, called also *Vila Valentia*, *Bivona*, a town of Italy, upon the western coast of Brutium, at the lower part of a gulf, which opened to the north.

HIPPOPECTINITE, in *Natural History*, or great scallop, is a fossil shell, half a foot over, found in a great rock in Virginia, 40 miles from a sea or river, according to Dr. Grew. *Rarities of Gresham College*, p. 262.

HIPPOPHÆ, in *Botany*, apparently from *ἵππος*, a horse, and *φαεινός*, to destroy, a name in Dioscorides for what he says was used by fullers in dressing cloths, but whose description answers to something of the *Rhamnus* kind. It is however in some points applicable to the shrub for which it is retained by Linnæus.—Linn. Gen. 517. Schreb. 682. Mart. Mill. Dict. v. 2. Sm. Fl. Brit. 1075. Juss. 75. Lamarck. Illustr. t. 808. Gærtner. t. 12.—(*Rhamnoides*; Tourn. t. 481.)—Class and order, *Diacia Tetrandria*. Nat. Ord. *Calycifloræ*, Linn. *Eleagni*, Juss.

Gen. Ch. Male, *Cal.* Perianth of one leaf, divided almost to the base into two equal, roundish, obtuse, concave, erect lobes, cohering at their summit, but a little gaping below. *Cor.* None. *Stam.* Filaments four, very short; anthers oblong, angular, nearly equal to the calyx.

Female, *Cal.* Perianth of one leaf, ovate-oblong, tubular, slightly cloven at the top, deciduous. *Cor.* None. *Pist.* Germen superior, small, roundish; style simple, very short; stigma thickish, oblong, recurved, reaching twice the length of the calyx. *Peric.* Berry nearly globose, of one cell. *Seed* solitary, oblong, shining, with a furrow at each side, invested with a double membranous coat.

Eff. Ch. Male, Calyx in two deep segments. Corolla none. Female, Calyx tubular, cloven. Style one. Berry superior. Seed solitary, doubly coated.

Obf. Mr. Viborg, the Danish naturalist, has discovered some hermaphrodite flowers, occasionally intermixed with the others. Gærtner describes but a single coat to the seed, which he properly calls the lining of its cell, overlooking a thicker,

thicker, almost leathery, integument, or arillus, which closely enfolds the seed itself, and which is well displayed by Mr. Sowerby in Engl. Bot.

1. *H. rhamnoides*. Linn. Sp. Pl. 1452. Engl. Bot. t. 425. Pall. Ross. v. 1. t. 68. Fl. Dan. t. 265. (Rhamnus fecundus Clusii: Ger em. 1334.) Sallow-thorn, or Sea Buckthorn.—Leaves lanceolate.—Native of sandy banks and marshes near the sea, in various parts of Europe, from the south of France to Finland. It is abundant on the Norfolk coast, growing on the cliffs and sand-banks, and flowering about the middle of May, nor is it infrequently cultivated in shrubberies. The woody bushy stem is six or eight feet high, thorny. Leaves scattered, about two inches long, lanceolate or almost linear, bluntish, entire, of a silvery white beneath. Both their surfaces, as well as the young bark and half-ripe fruit, are clothed with minute umbilicated scales, as in the genus *Elagnus*. Flowers small, green, in the bosoms of the lowermost leaves of each branch, while very young, the two sexes on different shrubs. Berries ripened in autumn, very copiously on the wild plants, never, as far as we have seen, on garden ones. They are the size of large currants, of a glowing orange-colour, pulpy, very acid, agreeable enough when preserved with sugar. Linnaeus found the Finlanders using them as a sauce to their fish, but he complained of their intolerable acidity. Rousseau gives a ludicrous account of the singular politeness of a young man, who seeing him eat these berries, as they were walking together, did not presume to take the liberty of telling him they were considered as poisonous.

2. *H. canadensis*. Linn. Sp. Pl. 1453.—Canada Sea Buckthorn.—Leaves ovate.—Gathered by Kalm in Canada. It differs from the former in its much shorter, broader, ovate or elliptical leaves, very conspicuous for their silvery backs, and the rusty scales scattered over them. The flowers are in little, brown, shining, axillary clusters.

HIPPOPHEOS. This was a name given not only to the larger species of the pheos or stebe, but to a very different plant, a kind of dodder, more vulgarly called epipheos, from its growing upon the pheos, as the dodder of thyme is called epithymum, from its growing upon that plant. It is possible indeed that it might be called originally hippopheos, from its riding, as it were, on the pheos. But however this be, there is great reason to suspect that Dioscorides confounds this dodder with the plant itself, and gives its virtues as those of the proper hippopheos; which, according to Theophrastus, and all the other writers of credit in antiquity, is only a larger species of the pheos, a prickly shrub, not a plant, growing on it. See **EPIPHEOS**.

HIPPOPHTHALMIC MUSCLES, a name given by the ichthyologists to a pair of large muscles found in the head of fish, one placed immediately under the eye; these serve to move the eyes; and, with the two maxillary muscles placed under the jaws, are the principal muscular parts of the head of fish.

HIPPOPODES, or **HIPPOPEDES**, composed of ἵππος, horse, and πούς, foot, in *Ancient Geography*, an appellation given to a certain people situated on the banks of the Scythian sea; as being supposed to have horses' feet.

The hippopodes are mentioned by Dionysius, Geogr. v. 310. Mela, lib. iii. cap. 6. Pliny, lib. iv. cap. 13. and St. Augustine, De Civit. lib. xvi. cap. 8. But the truth is, that they had this appellation given them on account of their swiftness, or lightness of foot.

HIPPOTAMUS, in *Zoology*, a genus of Mammalia in the order Belluæ; the front teeth in each jaw are four, those in the upper jaw are remote and form a pair each side; those in the lower are prominent, and the two middle ones

longest; the tusks are solitary, the lower ones long, curved, and obliquely truncated; feet furnished with hoofs at the margin.

Whether in reality there may exist more than one species of this genus appears uncertain; there is every reason to apprehend the morse has been sometimes confounded by travellers with the true hippopotamus; and the discordance which we trace in their reports, arising as it must be conceived from this particular cause, may have erroneously given birth to the prevailing supposition of those writers who believe there are two species. The observations of Sonnini seem in favour of the existence of more than one kind, yet his conclusions, however just, are not apparently founded on better authority than the discordance of writers, to which we before alluded. Those who apprehend there are two species consider one as an inhabitant of the fresh water, or rather of inland rivers, lakes, and marshes, and the other to be entirely confined to the sea; the latter is probably the morse.

After the elephant and the rhinoceros, the hippopotamus has been in all ages an object of admiration to mankind; its size is often equal to that of the rhinoceros, and its force but little, if at all, inferior; and thus in magnitude, as well as strength, it yields alone to the decided superiority of the elephant.

The appearance of the hippopotamus when on the land is altogether uncouth, the body being extremely large, flat, and round, the head enormously large in proportion, and the legs as disproportionately short. Authors vary considerably in describing the size of this animal. The length of a male has been known to be seventeen feet, the height seven feet, and the circumference fifteen; the head three feet and a half, and the girth nine feet; the mouth in width about two feet. The general colour of the hippopotamus is brownish; the ears small and pointed, and lined very thickly with fine short hairs; the eyes are small in proportion to the size of the creature, and black; the lips are very thick, broad, and beset with a few scattered tufts of short bristles; the nostrils small. The armament of teeth in its mouth is truly formidable, more particularly the tusks or canine teeth of the lower jaw, which are of a curved form, somewhat cylindrical, striated in a longitudinal direction, and obliquely truncated at the end; these are so strong and hard, that they will strike fire with steel, are sometimes more than two feet in length, and weigh upwards of six pounds each. The teeth in the upper jaw much smaller; those in the upper jaw are of a moderate size; those in the lower strong, somewhat conic, sharp pointed, and projecting forwards almost horizontally. The whole surface of the body is covered with short hair, which is more sparingly set on the under parts than the upper. The tail is short, thick, slightly compressed, a little hairy, and marked by several strong circular wrinkles. The feet are large, and each of the four lobes or toes furnished with a hoof.

The colour of the hippopotamus, when just emerging from the water, is palish brown, or mouse colour, the lower parts inclining to blueish or slate colour, the belly flesh colour, and the skin appearing through the hair. Sparrman speaks of its "slimy appearance when newly come out of the water, which is said to glisten in the moon-shine like a fish," and other writers agree that the blueish tinge of colour that appears on the body, when rising out of the water, is entirely dissipated as the skin becomes dry.

This animal was well known to the ancients. Most commentators conceive it to be the behemoth of Job, who describes its manners, food, and haunts so admirably, as to leave little reason for believing that scriptural writer alluded to any other animal. In the verse, "Behold now Behemoth

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which I made near thee; he eateth grafs as an ox." It is represented as an inhabitant of the Nile, in the neighbourhood of Uz, the land of Job, and as an animal that subsists on vegetable food; the second, "Lo! now his strength is in his loins, and his force is in the navel of his belly;"—and "his bones are as strong as pieces of brass, his bones are like bars of iron," indicate its great strength and the hardness of his bones. Its residence among the vast reedy marshes, in rivers overshadowed with thick forests, is implied in the verse, "He lieth under the shady trees in the covert of the reeds and fens." And in the fifth verse, "Behold! he drinketh up a river; he trutteth he can draw up Jordan into his mouth," refers to the characteristic wideness of his mouth, which is poetically described as large enough to exhaust such a stream as the Jordan.

By writers of antiquity, the hippopotamus is described as possessing the most marvellous powers of strength. They also feigned that it vomited fire, in allusion, no doubt, to the prodigious hardness of its teeth, which give fire with steel. Among the ancient Egyptians it was revered as a tutelary divinity; they paid it sacred honours, and engraved its image upon their obelisks. But if we may credit Diodorus Siculus, they would sometimes wage war against this object of their adoration, attacking it with spears and daggers, and after inflicting many grievous wounds, leave the poor lacerated beast to expire through the loss of blood. In like manner the negroes of Congo, Angola, Elmina, and other adjacent parts of Africa, at this day regard the hippopotamus as a god, and yet they not only attack and destroy it, but devour its flesh with great avidity. The hippopotamus occurs among the little figures in the casts taken from the ancient tombs of Siberia, now at Paris, from whence it is concluded this animal was formerly known in that part of the world; not as an inhabitant, the rigorous coldness of the climate forbidding that idea, but as an idol, and being there worshipped as a divinity as well as in Egypt.

Pliny relates that Scaurus, during his ædileship, exhibited before the Roman people four crocodiles, and one hippopotamus, in a temporary lake prepared for the occasion. Augustus also produced one of the latter on his triumph over Cleopatra; and after this the figure of the hippopotamus appears on various medals of the Roman emperors. For many ages after no authentic history of this animal was obtained. The first among modern describers who have noticed it with accuracy was Zerenghi, an Italian surgeon, who, about the beginning of the seventeenth century, printed an account of it at Naples, accompanied by a figure taken from a dried skin, which figure is again given in the works of Aldrovandus. Since that period the history of this animal has been more fully developed, through the zealous attention bestowed on the subject by travellers, to whom an opportunity has been afforded of examining the animal in the living state, and in its native regions; and to none of whom the curious are more indebted, for satisfactory information in this particular, than to the ingenious Dr. Sparrmann.

The vast strength of this animal would render it one of the most formidable of terrestrial quadrupeds, were its dispositions ferocious; on the contrary, it is an animal of very tranquil dispositions, unless under circumstances of great irritation, and then its power is really to be dreaded. Its bulk is so great that twelve oxen have been found necessary to draw one ashore that was shot in a river above the Cape. The largest hippopotamus, among about thirty, killed by colonel Gordon, was eleven feet long; this was a female; the largest male, which always exceeds the other sex in size, was eleven feet eight inches. Dr. Sparrmann, however, describes some larger; and Mr. Bruce speaks of others in lake Tzana, that

were more than twenty feet long. It is asserted by Hasselquist, that the hide alone is a load for a camel.

These animals inhabit the warmer parts of the globe; and, as in ancient times, are found in the Nile, where it flows through the fens of Upper Egypt, below which it is rarely seen. The latest instance on record of its appearing near the mouth of that river, was in the year 1600, when two were killed near Damietta. It abounds most in the rivers among the woods and deserts of Ethiopia, and in those of Africa, as the Gambia, Senegal, Zaira, residing equally in rivers near their fall into the sea, and in the inland lakes from the very interior of Africa to the Cape of Good Hope. Formerly they abounded in rivers near the Cape, but are now almost extirpated; and it was even found necessary under the Dutch government, in order to preserve the few remaining in the Berg river, to prohibit shooting them without express permission.

From the unwieldiness of the body and the shortness of the legs, the hippopotamus is not able to move very swiftly upon the land, and he then becomes timid. His pace is, however, quicker on the land than generally imagined. When pursued he takes to the water, plunges in, sinks to the bottom, and is seen walking at perfect ease, or swimming with like facility, the great size of his belly rendering his specific gravity equal to that of water. He cannot, however, continue long under water without rising towards the surface to breathe; and in the day-time he is so fearful of being discovered, that when he takes in a fresh supply of air, the place is hardly perceptible, for he does not venture even to put his nose out of the water. In rivers unfrequented by mankind he is less cautious, and puts his whole head out of the water. If wounded, he will rise and attack boats or canoes with great fury, and often sink them by striking, or biting large pieces out of their sides, and thus people are frequently drowned by these animals. It is reported also that they will at once bite a man in two. In shallow rivers the hippopotamus makes deep holes in the bottom, in order to conceal its great bulk. When he quits the water he usually puts out half his body at once, and smells and looks around, but sometimes rushes out with great impetuosity, and tramples down every thing in his way. It is hazardous to navigate canoes in rivers much infested by these animals, as the slightest movement of their bodies may easily overturn them.

The food of the hippopotamus is entirely of the vegetable kind, in quest of which he quits his watery residence, under the favourable darkness of the night, and ranges in security along the banks and adjacent places, destroying in his progress, by the trappings of his feet, an infinitely greater portion of herbage than could possibly be required to satisfy the craving of its appetite. He feeds on the roots of grafs which he readily tears up with his teeth. In cultivated places he commits incredible mischief, especially among the plantations of sugar, rice, corn, and other grain, and among young and tender trees, the shoots of which he eagerly devours.

The manners of the hippopotami approach nearer to those of the hog than the horse tribe, with which its name implies an affinity; for which reason Alpin calls them *Cheropotames*, or river-hogs. They commonly sleep in the reedy islands, in the middle of rivers, and if possible in situations surrounded by thick forests, and deep impenetrable marshes; and in such situations they bring forth their young. A herd of females is said to have but one male; they bring forth one young at a time, and that on the land, but suckle the young in the water. The males often contest each other's right over the

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females; and the attack of two such powerful animals, as may naturally be imagined, is terrible. The earth shakes beneath them, the water trembles, their blood flows in torrents, and the masses of flesh torn out by their mighty grasp of teeth lie scattered upon the blood-stained scene of conflict. Sometimes the weakest, perceiving his efforts ineffectual, leaves his antagonit master of the field, but this does not happen often; for it is seldom that one or both of them does not perish on the spot. The female is supposed to go with young nine months. She is often seen in the rivers with the young one on her back, and her manner of suckling is not dissimilar to that of the cow, the teats, which are small, and two in number, being placed far back under the belly; the milk is thin and more aqueous than that of the cow. The female, at particular seasons, has a strong smell of musk.

The modes of capture adopted in taking these animals are various. They are sometimes shot, sometimes attacked with harpoons, and sometimes taken in pit-falls prepared for the occasion in the banks of rivers. In some parts the natives place boards full of sharp irons in the ground, which these heavy beasts striking into their feet become incapable of moving, and thus fall an easy prey. Sometimes they are struck in the water with harpoons fixed to cords, and ten or a dozen canoes are employed in the chase. This is the common method in which it is taken in Africa. Hasselquist tells us the Egyptians have a curious manner of relieving themselves in some degree from this destructive animal. "They remark the places (he says) which he frequents most, and there lay a large quantity of peas; when the beast comes ashore, hungry and voracious, he falls to eating what is nearest him; and, filling his belly with the peas, they occasion an unsupportable thirst. He then returns immediately into the river, and drinks upon these dry peas large draughts of water, which suddenly cause his death; for the peas soon begin to swell with the water, and not long after the Egyptians find him dead on the shore, blown up as if killed by the strongest poison."

The flesh of the hippopotamus is eaten in Africa by the poorer orders of people, who, as a matter of emolument, first separate it from the fat, a kind of fine lard with which the animal abounds, and which bears a considerable price, both on account of its flavour, and because it is supposed to possess many admirable virtues. This animal is also taken for the sake of the hide, which on the back is two inches thick or more, and which, when dried, is said to be proof against the stroke of a musket-ball. This is converted by the Africans into shields or bucklers. The value of the teeth is another inducement for its destruction; these, the tusks in particular, being superior in hardness to ivory, at the same time they are not so subject to become yellow, and therefore better for the purpose of the dentist: superstition has further stamped on them an additional value, the Africans considering them as an antidote to poison, and usually wearing some trinkets formed of these teeth about their persons. And finally it may be added, upon the credit of Labat, that the blood of this animal is employed by the Indian painters in the preparation of their colours, though in what manner we are not informed.

The mild disposition of these animals is confirmed by Belon, who assures us that when young they are easily tamed. He saw one kept in a stable, and which shewed no inclination to escape, or do any kind of mischief, when, as sometimes happened, he was released from his confinement. The cry of this animal has been variously described; Adanson, an author of veracity, declares it to be similar to that of the horse, uttered with considerable force.

In conclusion, we shall notice the interesting observations made on the hippopotamus by Dr. Sparrman, a writer whose accuracy is in general indisputable; the style adopted by that author is rather prolix, and it besides abounds in local incidents not immediately necessary to be related, but as these cannot easily be expunged without detriment to the fidelity, and tendency of the representation he has given, it will be best to repeat the observations of that traveller in their varied details, in his own words.

"Towards evening, on the 24th of January 1776, we came to a pit in the river, which our guides knew used to be frequented by sea-cows (meaning the hippopotami). For this reason, all unfrequented ways by which these animals might come up from the river were beset by us separately; our hunting party consisting in the whole of seven persons, namely, five of us Christians, together with my Hottentot, and another belonging to the farmers. Besides this, the rest of the Hottentots were ordered to go to the windward, and to the more open places; and by smacking their whips, and making other noises, to frighten and drive the animal towards us as soon as it should make its appearance; in consequence of which measures, it appeared to us, that when at length obliged to go on shore in quest of its food, it must necessarily come to the hiding-place of some one of the hunters. Every one of these places were just at the edge of the river between the reeds which grew on the dry parts of the river, or in those spots which the water had left, and at the same time close to the very narrow paths which the animal had made for itself at each place; in consequence of which disposition, it would inevitably pass not above six inches, or a foot at most, from the mouth of the sportsman's piece. Consequently our whole dependance was upon two circumstances, viz. that our guns should not miss fire, and that the shot should not fail to prove mortal. In the former case, the sportsman must have inevitably paid for his temerity with his life; though in the latter, he had reason to hope, from instances of what had happened to others, that the fire, together with the report from the piece, as well as the ball itself, would confuse the animal, so as to prevent it from immediately making towards its enemy. The banks of the pit, which were then beset, were in most places steep and perpendicular, and the pit itself almost three quarters of a mile long; but my post, and that of my fellow traveller, (Mr. Immelman,) happened to be at the distance of not above thirty or forty paces from each other. To these very places too, after we had waited at them an hour and a half, in the most profound silence, the enormous animals did not fail to resort. They had already, while on the other side of the river, got scent of the Hottentots, and now shewed, by their swimming up and down, and blowing themselves, as well as by a short but acute and piercing grunt or neighing noise, that they had a great suspicion of the passes: I believe Mr. Immelman was not less eager and anxious than myself, each of us expecting at every moment to have a bout with a large enormous beast, which we knew had given certain proofs of its being able to bite a man asunder. Yet were we each of us at times no less fearful lest the other should have the honour of killing game of such consequence. The hippopotamus, however, left us, and had made its appearance in the same manner, where the farmers were stationed; notwithstanding which at that very instant we heard it shot at by one of the Hottentots.

"The sable darkness of the night, and the glittering of the Hottentot's piece, together with the loudness of the report from it, occasioned by the weight of the charge, and the vibrations of the echo prolonging the sound along the neighbouring chain of mountains, all conspired to compose a most awful and superb spectacle, which was still heightened by the expect-

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expectation of seeing an animal fall, superior in bulk to the elephant. This sublime spectacle was immediately followed by a ridiculous kind of farce performed by a troop of baboons, which, from their calling and answering each other along a straight line, we could discover to be encamped on a steep rocky mountain in the neighbourhood, with regular outposts in the trees on each side of it. After an interval of a couple of minutes, silence again took place, till two o'clock, when the other Hottentot fired his piece; and another alarm, though of shorter duration, went through the baboons' outposts and head-quarters.

"The next morning, for the arrival of which we ardently longed, in order to satisfy our curiosity, our Hottentot sportsmen related to us the following particulars concerning the adventures of the night. Involved in darkness, covered up to the eyes in reeds, and overshadowed with branches of trees, they could only get a glimpse of the animal, and consequently could not answer for their shots having taken place, and one of them acknowledged, that he was a little confused, as he could not well see what he was about, and for the same reason fired his piece too soon, before the animal had well risen out of the water. The other indeed had had an opportunity, both with the ball and shot that made up the charge, of wounding the animal which went on its road and passed directly by him; but he could not see which part of the animal presented itself before the muzzle of his piece. As soon as he had fired he flunk away, and directly afterwards heard the beast take to the water. The rest of the Hottentots had observed one of these animals, probably a different one from this, run up on a shallow along the river side, and thus make its escape, without having been able to prevent it. After this we staid here till the afternoon, in hopes that the wounded animals would die, and rise to the top of the water." But we staid in vain, and to as little purpose would it probably have been had we waited longer, as there grew by the side of the river a great number of trees, to the roots of which these creatures, it is said, in the agonies of death make themselves fast by means of their long and crooked tusks. On the other hand, supposing those two sea-cows to be but slightly wounded, they would be cautious how they made their appearance, and indeed, in all probability, it would have been a dangerous service to the sportsman who would have ventured to have followed them any farther. Besides, the water had now, in the space of a few hours, risen considerably, and had overflowed many spots fit for lying in ambush; for which reason we departed to another hippopotamus pit, less than this. Here, too, we laid, by way of snare, a large blunderbuss. The Hottentots occupied one post; two of our companions guarded another; other two (an old farmer and his son) stationed themselves at the third, and placed me in the middle of them. Just in this part the banks of the river were of a considerable height, and the river itself was dried up near an extensive shallow, where it was spread out into a little plain covered with pebble stones and gravel. We three then set ourselves down close by the side of each other, in a path made by the sea-cows, making ourselves pretty certain, as the place was flat, and consequently it was light here, of being able, if any hippopotamus should chance to come upon the shallow and look about it, to see it plain enough to kill it with a volley of three shots. But to the great endangering of our lives, we on a sudden found the animal much quicker in its motions as well as bolder than we had thought it; for while I was sitting half asleep and moralizing on the subject, struck with the consideration that we with our guns had at that present moment the dominion over Job's leviathan or behemoth; while on the other hand the flies or small musquitoes had the dominion over

us, (so much indeed, that I was obliged to wrap my face up in a handkerchief,) a sea-cow came rushing towards us out of the river with a hideous cry, as swift as an arrow out of a bow, at the same time I heard the farmer call out "Heer Jesus!" But fortunately, at the very instant he discharged his piece, which flashing full in the animal's face, contributed perhaps more than the ball to make it start back; when setting up another cry, it threw itself into the water again with as great precipitation as it came out.

"At this I was not a little alarmed, yet, what is very singular, not at the danger, which was real, of being trampled under foot, or being bitten asunder by the beast, but in consequence of my apprehensions, which were merely imaginary, of being drowned; for the rattling noise arising from the creatures running out of the water, and along the stony beach, immediately suggested to me the idea that the river had on a sudden overflowed its banks; a supposition to which I was the more inclined, as I knew that this accident very frequently happens here. And as to the hippopotamus, when it is newly come out of the water, and is wet and slimy, it is said to glitter in the moon-shine like a fish, it is no wonder that as soon as I took my handkerchief from before my eyes, it should appear to me at so near a view as I had of it, like a high column of water, which seemed to threaten to carry us off and drown us in a moment; for which reason I ran, or rather flew towards the higher ground, leaving both my guns and my brother centinels behind me. But as just at this spot I was prevented by the steepness of the river's banks from ascending the heights, and nevertheless perceived that neither my companions nor myself were drowned, it ran in my head, for the space of several seconds, that we were all of us dreaming, or else delirious. The farmer's son had fallen asleep, and still continued to sleep very soundly. As to the farmer himself, who, panting and breathless, every now and then looked up to heaven, and at the same time with much awkwardness and bungle was endeavouring to make his escape. I made all the haste I could to disengage him from a large wrapper, which, as well on account of his gout as by way of keeping off the flies, he had wrapped round his legs. I then asked him what course the water had taken when it overflowed? and he, after a long pause, answered only by asking me, in his turn, if I was not mad? Upon which I was almost ready to put the same question to myself. And even at last, when all this was unriddled to me, I could not help doubting the truth of it, till I found the farmer's gun was really discharged; for the rattling among the stones, and the squashing in the water occasioned by the sea-cow, was what I first heard, and what made me take to my legs; so that I did not in the least attend either to the report of the gun or the cry of the animal, though these latter appeared to the rest of our party the most terrible; so much indeed, that they occasioned Mr. Immelman, together with the farmer's son-in-law, to fly from their post, though they had seen nothing of all that had happened, and could not easily have come to any harm."

"On the twenty-fifth, from some traces of the sea cows which we found in the dust near another spot, we concluded that many of these huge amphibious animals had lately taken up their quarters in a certain pit thereabouts; which we accordingly prepared to lay siege to in every possible way. In the mean time, we saw a young lion make its escape into a close thicket on the side of this same pit, where it might be perfectly safe from us and our hounds. Not much approving of this animal's being so near a neighbour to us, we thought it best for several of us marksmen to be together at each hiding place; at the same time ordering our Hottentots, partly

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partly by making a noise and uproar, and partly by the means of making large fires, to frighten the sea-cows from attempting any of the other passes. These animals had probably been beset in the same manner several times before, as this night we scarcely heard any thing of them. In the mean while, however, we flattered ourselves, that by continuing to block them up, we should, at least, by starving them, force them to quit their asylum, and expose themselves on the land, to the fire of our guns.

“On the following day we were likewise on the look out after these animals, between the hours of ten and eleven in the forenoon, and also just before dusk, though upon quite a different plan from what we had before, as we meant now to hit them on their snouts the instant they should stick them up within the reach of our guns out of the water in order to take breath, or more properly (as it is not inaptly called by the colonists,) to blow themselves. In order that the shot might prove mortal, we were obliged, however, on this occasion, to direct it in such a manner, that the ball should pass through the cavity of the nose into the brain. It was merely upon this plan that we went out after the sea-cows before we arrived at Agter Bruntjeshoogte, and were strengthened by the farmer's party. But we constantly found these animals too shy to allow us to put our designs in execution; for although, in those places where they had not been frightened or wounded, they will often, in the middle of the day, raise their heads and part of their bodies above the surface of the water, they at this time scarcely ventured just to put out one of their nostrils, in order to breath almost imperceptibly; and this only for the most part in those spots in which they were sheltered from us by the hanging branches of trees. Notwithstanding this disadvantageous situation, they, in consequence of the acuteness of their smell, seemed still to discern us, especially when we were to the windward of them; as in that case they instantly withdrew to another part.” “The same night we betook ourselves again to our posts, and at half an hour past eight, it being already very dark, a sea-cow began at intervals to put its head up above the water, and utter a sharp, piercing, and as it were, a very angry cry, which seemed to be between grunting and neighing. Perhaps this cry may be best expressed by the words *beurkh burkh lub-hub*; the two first being uttered slowly, in a hoarse, but sharp and tremulous sound, resembling the grunting of other animals; while the third, or compound word, is founded extremely quick, and is not unlike the neighing of a horse. It is true, it is impossible to express these inarticulate sounds in writing; but perhaps one may make nearer approaches to it than one can to the gutturo-palatal sounds of the Hottentot language. At eleven o'clock came the same, or else some other hippopotamus, and, in like manner, visited the posts we occupied. He did not, however, dare to come up, though, to our extreme mortification, we heard him come and nibble the boughs which hung over the surface of the water, as well as a little grass, and a few low shrubs which grew here and there on the inside of the river's banks. We were, however, in hopes that this way of living would not long suffice animals, one of which only required almost a larger portion than a whole team of oxen. Thus far, at least, is certain, that if any one should calculate the consumption of provisions made by a sea-cow from the size of its fauces, and from that of its body and his belly, which hangs almost down to the ground, together with the quantity of grass.”

“We passed the following night at the same posts as we occupied on the night preceding, the sea-cows acting much in the same manner as before. On the 28th after sun rise, just as we were thinking of going from our posts home to

our waggons, there came a female hippopotamus with her calf from some other pit or river, to take up her quarters in that which we were blockading. While she was waiting at a rather steep part of the river's banks, and looking back after her calf, which was lame, and consequently came on but slowly, she received a shot in her side, upon which she directly plunged into the water, but was not mortally wounded; for Flip, (the farmer's son,) the drowsiest of all sublunary beings, who had shot her, and that instant could hardly be awakened by two Hottentots, was still half asleep when he fired his piece. And happy was it for him that the enormous beast did not make towards his hiding, or rather sleeping place, and send him into the other world to sleep for ever. In the mean while his shot was so far of service, that one of my Hottentots ventured to seize the calf, and held it fast by its hind legs, till the rest of the hunting party came to his assistance. Upon which the calf was bound fast, and with the greatest joy borne in triumph to our waggons; though while they were taking it over a shallow near the river, the Hottentots were very much alarmed, lest the wounded mother and the other sea-cows should be induced, by the cries of the calf, to come to its rescue; the creature, as long as it was bound, making a noise a good deal like a hog that is going to be killed, or has got fast between two posts. The sound, however, proceeding from the hippopotamus calf was more shrill and harsh. It shewed likewise a considerable share of strength in the attempt it made to get loose, and was found to be quite unmanageable and unwieldy; the length of it being three feet and a half, and the height two feet; though the Hottentots supposed it to be no more than a fortnight, or at most, three weeks old. When at last it was turned loose, it ceased crying; and when the Hottentots had passed their hands several times over its nose, in order to accustom it to their effluvia, began directly to take to them.” “While the calf was yet alive, I made a drawing of it, a copy of which may be seen in the Swedish Transactions for 1778. After this, it was killed, dissected, and eaten up in less than three hours time. The reason of this quick dispatch was partly the warmth of the weather, and partly our being in absolute want of any other fresh provisions. We found the flesh and fat of this calf as flabby as one might have expected from its want of age, and consequently not near so good as that of the old sea-cows; of which I found the flesh tender, and the fat of a taste like marrow, or at least not so greasy and strong as other fat. It is for this reason the colonists look upon the flesh and fat of the sea-cow as the wholesomest meat that can be eaten; the gelatinous part of the feet in particular, when properly dressed, being accounted a great delicacy. The dried tongues of these animals is considered, even at the Cape, as a rare and savoury dish. On my return to Sweden, I had the honour to furnish his majesty's table with a dried sea-cow's tongue, two feet eight inches long. With respect to form, the tongue of a full grown hippopotamus is very blunt at the tip, and is in fact broadest at that part; if, at the same time, it is slanted off at one side, and marked with many lobes, as I was informed it is, this circumstance may, perhaps, proceed from the friction it suffers against the teeth, towards the side on which the animal chiefly chews; at least, some traces of this oblique form were discoverable on the dried tongue I am speaking of.”

The food of the hippopotamus, according to Dr. Sparrman, consists entirely of herbs and grass, a circumstance, he remarks, of which we are informed by father Lobo, and which may partly be inferred from the figure of the stomach. Hence this writer thinks it very improbable the hippopotamus

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mus should ever hunt after fish, as is asserted by Buffon and Dampier; and this the more especially, as in some of the rivers in the southern parts of Africa, where the sea-cows are daily seen in great abundance, there is no fish; and in others which they inhabit, only a few "baltard springers" (cyprinus gonorynchus), which are scarcely larger than the common herring. "It is true, (says Dr. Sparrman,) that the sea-cows sometimes frequent the mouths of the rivers here, which are full of sea-fish, and even sometimes the sea itself: we know, however, that these huge quadrupeds are, notwithstanding this, obliged to go from thence upon dry land in quest of food. Neither is it probable that they can drink sea-water, as an instance was related to me of the contrary in a hippopotamus, which having taken refuge in the sea, and yet was obliged to go ashore every night, and drink fresh water from a well in the neighbourhood, till at last it was shot by some people that lay in wait for it there. That the hippopotamuses actually lived in salt water, I have seen evident proofs at the mouths both of the Kromme and Cam-tour rivers, particularly the latter, on my journey homewards; where many of these animals blowed themselves in broad day-light, and thrust their heads up above the water; and one of them in particular, which had been wounded by an ill-directed shot on the nose, neighed from anger and resentment. In Krakekamma, I saw on the beach manifest traces of an hippopotamus, which had come out of the sea, but had retired thither again directly. That very attentive navigator Capt. Burtz informed me, that he had frequently seen, on the eastern coast of Africa, sea-horses (meaning probably the hippopotamus) raise their heads above the surface of the water, in order to blow themselves and neigh. I have been induced to be rather circumstantial on this subject, as M. Adanson had taken it into his head, in his "Voyage au Senegal," to limit the abode of the hippopotamus to the fresh-water rivers only in Africa; and M. de Buffon has taken upon him to support this opinion, and to render Kolbe's testimony to the contrary liable to suspicion.

"The method of catching the hippopotamus consists (besides shooting it) in making pits for it in those parts which the animal passes in its way to and from the river; but this method is peculiar to the Hottentots, and is only practised by them in the rainy season, as the ground in summer is too hard for that purpose. It is said that they have never succeeded in killing this huge aquatic animal with poisoned darts, though this mode of killing game is practised with advantage by the Hottentots, for the destruction both of the elephant and rhinoceros. The colonists, likewise, were not entirely unacquainted with the method mentioned by M. Haffelquist, as being common in Egypt, *viz.* to strew on the ground as many peas or beans as the animals can possibly eat, by which means it bursts its belly and dies. But as this method is very expensive, and they can generally have this animal for a single charge of powder, and a tin ball, shot in a proper direction, they chiefly, and almost entirely have recourse to this cheaper expedient."

Not on his own authority, but on the assurance of old experienced hunters, Dr. Sparrman tells us the hippopotamuses couple in the same manner as the common cattle. A brother sportsman, said he, once observed a peculiar kind of vermin on the body of an hippopotamus. These amphibious animals are likewise much infested with intestinal worms, one of which, found on the calf before-mentioned by Dr. Sparrman, he describes as being a kind of leech of about an inch long, the colour blackish, with a brownish line down the back, and the lower surface pale brown. With regard to

its food, this writer imagines the adult animal may be not very choice, as the calf, apparently pressed by hunger, was observed to eat the dung of one of the oxen belonging to their party.

"Having already (says Dr. Sparrman) exceeded the limits I had prescribed to myself, I do not intend to dwell here on the anatomy of the hippopotamus we caught, particularly as the internal conformation of the calves is somewhat different from that of the adult animal. I shall, therefore, only briefly mention the following particulars: the stomachs were four in number, and consequently one more than in the fetus examined by M. Daubenton, which was kept in spirits. The two first stomachs were each of them about seven inches long, and three inches in diameter; the third nine inches in length, and a little wider than the two former; the fourth was seven inches long, and at the upper part five inches broad, but decreased by degrees on one side till it terminated in the *pylorus*, which had an aperture an inch wide, being about half as wide again as the *cardia*. I did not observe any such valves as M. Daubenton has delineated. The first stomach we found mostly empty, it containing only a few lumps of cheese and curd; it likewise differed from the rest by the superior fineness of its internal coat. The internal membrane of the second stomach was rather coarser, and had many small holes in it; it likewise contained several clods of caseous matter, together with a great quantity of sand and mud. The third stomach had very visible folds, both longitudinal and transverse, on the inside of it, and contained caseous lumps of a yellow colour, and harder consistence than the others, together with several leaves quite whole and fresh, and at the same time some dirt. The interior membrane of the fourth stomach was very smooth, though it was not without folds: in the stomach itself there was a good deal of dirt, with a small quantity of curds, which were whiter than they were in any of the other stomachs. The fourth stomach in a great measure covered the rest, being situated on the right side of the animal, and was found to have the upper part of the melt adhering to its superior and interior edge. This latter viscus, which was one foot long and three inches broad, diverged from it downwards on the left side. The intestinal canal was 109 feet long; the liver measured fourteen inches from right to left, and seven or eight from the hind to the fore-part; on its anterior edges it had a large notch, being in other respects undivided and entire; it was of an oblique form, being broadest towards the left side, where I discovered a gall-bladder five inches in length. In the uterus there was nothing particular worthy of observation. I found two teats, and the heart surrounded with much fat; the length of this muscle was five inches, and the breadth about four inches and a half. The communication between the auricles, called the *foramen ovale*, was above an inch in diameter. Each lung was eleven inches long and undivided: but at the superior and exterior part of the right lung, there were two globules or processes, elevated half an inch above the surface; and on the side corresponding to it, in the left lung, and in the upper part of it, there was a little excrescence terminating in a point: somewhat below this, yet more forwards, there was found likewise a process half an inch in height. Directly over the lower part of the communication formed between the right and the left lung, there was a kind of creel or comb, measuring an inch from the top to the basis."

HIPPOTAMUS *Fossil*. Zoologists are acquainted with one living species of hippopotamus only; but late observations have proved that the bowels of the earth con-

tain the fossil remains of *two* perfectly distinct species, one of which appears not to differ in any respect from the one still existing; the other, being, as it were, a miniature copy of the larger, is nearly of the size of the wild boar. The discovery of this latter we owe to the indefatigable Cuvier, who has likewise proved the existence of the other species in a fossil state. Several authors, prior to that celebrated naturalist, have mentioned fossil bones of the great African hippopotamus, but subsequent observations have proved that they had been rather too rash in forming their diagnosis. Some of the teeth described by Daubenton as the *molars* of the hippopotamus, are proved by Cuvier to be those of the mastodonte, or the great American animal improperly called mammoth. Peter Camper, who has given an account of fossil teeth of the hippopotamus, appears to have fallen into the same error as Daubenton. Merk likewise describes a tooth of a hippopotamus found in the neighbourhood of Frankfort on the Mayn, which turns out to be a worn out intermediate tooth belonging to the same American animal. The tooth of a hippopotamus, mentioned by Deluc as having been found among the volcanic productions in the vicinity of Frankfort, is, according to Merk, nothing but the tooth of a rhinoceros. The teeth which Lang has figured under the same name are probably those of a horse, partly undeveloped, partly worn off. Also, Romé de l'Isle, de Lametherie, and Faujas St. Fond were led into error with regard to the teeth they described as belonging to the river horse. Some writers, on the other hand, have been in the possession of real fossil remains of the hippopotamus without being aware of it. Thus Aldrovandus has figured several *molars* of this animal under the name of elephant's teeth, while the real elephant's tooth, of which he has likewise given a representation, was considered by him as belonging to some large unknown animal. The only authors who have been more correct, both in the application of the name of hippopotamus, and in their observations respecting the fossil remains of the animal in question, are Antoine de Jussieu and Daubenton: the fossil bones described by the former as early as 1724, cannot be doubted to be really those of the river horse; and those indicated by Daubenton under the same name, and deposited (promiscuously with others, which, as above-mentioned, belong to the mastodonte) in the museum at Paris, were the first that served to convince Cuvier of the existence of fossil remains of

1. *The great or common Hippopotamus.*—One of the last-mentioned specimens of osseous remains consists in a portion of the right side of the lower jaw containing two molar teeth; the other in a single molar tooth. The place where they were found is not known with certainty. A third specimen, examined by Cuvier, is a fragment of the upper jaw, with two molar teeth, in the collection of M. de Drée; it is penetrated by a ferruginous substance, but does not bear any indication of its origin; it is not, however, improbable that it was found in the neighbourhood of Montpellier.

More satisfactory than the preceding specimens, with regard to its locality, was one in the collection of M. Miot. This bone, which was known to have been gathered in the Val d'Arno, in Tuscany, is an astragalus, resembling that of a hog, to which animal the hippopotamus approaches more than to any other, with regard to the conformation of all its parts. The place where bones of the hippopotamus are actually found being thus ascertained, Cuvier applied to Fabbioni at Florence, who sent him drawings of two molar teeth, and one representing a fragment of a tusk or canine tooth, which Cuvier soon ascer-

tained to belong to the animal in question. Respecting the canine tooth, it is observed by Fabbioni, that it differs from that of the African hippopotamus in its diameter being greater compared with its length, and also in its spiral curvature being much more distinct. He adds, that these teeth are scattered in various parts of the upper valley of Arno, but unaccompanied either by jaws or other bones.

Cuvier thinks there is no material difference either between these fossil teeth or the astragalus he has examined, and those of the living species; and, indeed, it is remarkable, that the animal, whose existence in a fossil state had at first appeared doubtful to geologists, should be one whose fossil remains far more strikingly resemble the bones of the still existing species, than is the case with any other fossil remains which naturalists have referred to living animals, such as the elephant, the rhinoceros, &c.

2. *The small fossil Hippopotamus.*—The mass out of which Cuvier extracted the remains of this species, (but the geological relation of which is unfortunately unknown,) resembles the osseous breccia of Gibraltar, Dalmatia, and Cete, except that the matrix, instead of being calcareous and stalactitical, is a homogeneous sand-stone; which uniformly fills up all the intervals between the bones; the bones also form a far more considerable portion of the mass than is the case in the Gibraltar rock. After having performed the difficult operation of disengaging all the separate osseous fragments, M. Cuvier found that they belonged to an animal, of which no traces had hitherto been discovered, but which was unquestionably a congener of the common hippopotamus. The teeth were found to agree in all essential points with those of the other species; and the remainder of the osseous fragments which were next examined, confirmed, without a single exception, what had been indicated by the characters of the teeth.

For a detailed description, together with the representation of the fossil bones of both these species of hippopotamus, we refer to Cuvier's Memoir, in vol. v. of the *Annales du Museum National d'Histoire Naturelle*.

HIPPOSIS, in the *Writings of the Ancient Physicians*, signifies a reducing any part of the body into its natural situation, by means of compression.

HIPPOTAURUS, in *Natural History*, the name given by authors to a creature generated between a bull and a mare. It seems a very unnatural copulation; but Wagner, in his History of Switzerland, assures us, that the creature produced by it is sometimes found wild in the mountainous parts of that country.

HIPPURIS, in *Botany*, is a name adopted by Linnæus from the ancients, in preference to some that had been given to this same genus by Vaillant and Dillenius. The original *ἵππουρις* of Dioscorides is evidently, from his description of both species, an *Equisetum*, (see that article.) The present plant has great affinity to that genus in habit and place of growth, though differing materially in its generic characters. Its name is compounded of *ἵππος*, a horse, and *ουρα*, a tail. Mr. Curtis has remarked that "*Hippuris* of Linnæus is *Πολύγωνον ὄβρι*, *Polygonum famina*, of Dioscorides, arranged by his commentator Matthioli with our *Polygonum aviculare*, and *Herniaria*. Succeeding botanists, imagining, from the growth of its leaves, or from its producing feed, that it had better pretensions to be ranked with the *Equisetum*, absurdly enough called it *Cauda equina famina*, to which Mr. Hudson could not well avoid giving the English name of Mare's-tail." This genus was denominated *Limnopezuce* by Vaillant and Haller, and *Pinastella* by Dillenius.—Linn. Gen. 5. Schreb.

Schreb. 8. Willd. Sp. Pl. v. 1. 26. Mart. Mill. Dict. v. 2. Sm. Fl. Brit. 4. Ait. Hort. Kew. ed. 2. v. 1. 12. Juss. 18. Lamarck Illustr. t. 5. Gært. t. 84.—Class and order, *Monandria Monogynia*. Nat. Ord. *Inundata*, Linn. *Naiades*, Juss.

Gen. Ch. *Cal.* Perianth superior, obsolete, undivided, or slightly two-lobed. *Cor.* none. *Stam.* Filament one, erect, inserted on the top of the germen; anther roundish, two-lobed, compressed. *Pist.* Germen oblong; style awl-shaped, erect, longer than the itamen; stigma simple, acute. *Peric.* none. *Seed* only one, roundish, naked, rather bony, covered with a thin sort of membrane.

Ess. Ch. Calyx obsolete, undivided. Corolla none. Stigma simple. Seed one, inferior.

1. *H. vulgaris*, Mare's-tail.—Linn. Sp. Pl. 6. Engl. Bot. t. 763. Curt. Lond. Fasc. 4. t. 1.—“Leaves whorled, numerous, linear.”—A common inhabitant of ditches, pools, and streams which are not very rapid, in Norfolk and the neighbourhood of London, flowering abundantly in May and June. In other parts of England it is of rarer occurrence, seeming to delight in a gravelly soil.—*Root* consisting of long verticillate fibres. *Stem* entirely simple, round, of a reddish tinge, and closely set with whorls of linear, entire, smooth leaves, about eight or more in a whorl. *Flowers* axillary, sessile, and of very simple structure, for “they consist of only an oval germen, crowned with an almost imperceptible margin or calyx, without a corolla, and terminating in a simple, thread-shaped, pointed style, by whose side stands one simple stamen with a two-lobed anther. The germen becomes a single naked seed.”

2. *H. tetraphylla*. Linn. Suppl. 81. (*H. lanceolata*; Retz. Obf. fasc. 3. 7. t. 1. *H. maritima*; Hellen. Diff. t. 1. Retz. Prod. 2.)—Leaves four or five in a whorl, elliptical, obtuse. This was sent to Linnæus by professor Leche of Abo, in Finland, in which neighbourhood it is said to have been first discovered by a Mr. Schulten. It is remarkable that Pallas sent it from Kamtschatka as a new *Elatine*, enquiring of Linnæus if it were distinct from the *Alfinastrum*, though his specimens most evidently display the flowers of a *Hippuris*, with their stamen and style in full perfection. This has the habit of the species just described, differing only in the fewness of leaves in each whorl, and their broad, elliptical shape. Whether it has in winter any difference of appearance in foliage, like the former, whose immersed leaves at that season are peculiarly elongated and pellucid, we have no information. Retzius, in his fasciculus above quoted, contends that this genus is gynandrous.

HIPPURIS, in *Ancient Geography*, an island of the Archipelago, being one of the Cyclades.

HIPPURISCUS, an island of Asia, on the coast of Caria.

HIPPURITES, in *Natural History*, a name given by some writers to a stone which they fancy to represent a saddle. It is described to be a soft argillaceous stone, owing its figure of a saddle to certain depressions. This is only a *lufus naturæ*, and is of the nature of the hand-stones, and foot-stones, with several others, which fancy has assisted in their resemblances, but which have been very improperly called by particular names.

HIPPURITES is also a name which Dr. Grew applies to a fossil plant of a stony texture, consisting of three stalks elegantly figured, to resemble the equisetum or horse-tail plant. *Rarities*, p. 268.

HIPPURUS, in *Ichthyology*, a species of *CORYPHÆNA*, which see.

HIPPUS, in *Medicine*, a disorder of the eyes, wherein

they continually shake and tremble, and thus represented objects as if continually fluctuating.

It is thus called from the Greek *ἵππος*, *horse*; because, according to Blanchard, objects appear to shift in it, as much as when we are riding.

HIR, in *Geography*, a town of Persia, in the province of Kerman; 18 miles S. of Sirgian.

HIRA, a word used by the writers in medicine either for the intestinum jejunum, or for all the intestines, or in a yet larger sense for all the contents of the abdomen. *Castel. Lex. in voc.*

HIRA, or *Alexandria*, *Mesjid-ali* or *Mebam-ali*, in *Ancient Geography*, a town of Asia, near a lake, at some distance from the right bank of the Euphrates: the residence of a dynasty of princes, who served the Persians and Parthians against the Romans.

HIRABAD, in *Geography*, a town of Persia, in the province of Irak. N. lat. 32° 16'. E. long. 55° 50'.

HIRÆA, in *Botany*, so called by Jacquin after John Nicholas de la Hire, a French physiological writer in the *Memoires de l'Acad. des Sciences*, whose remarks are sometimes cited by Du Hamel and others; and who discovered an exudation resembling manna on the leaves of orange-trees.—Jacq. Amer. 137. Linn. Syst. Veg. ed. 14. 427. Schreb. 307, 804. Willd. Sp. Pl. v. 2. 743. Mart. Mill. Dict. v. 2. (Flabellaria; Cavan. Diff. 436. *Triopteris Hiræa*; Gært. t. 116.)—Class and order, *Decandria Trigynia*. Nat. Ord. *Tribilata*, Linn. *Malpighia*, Juss.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, small, erect, in five deep segments, permanent, without any nectariferous external glands. *Cor.* Petals five, roundish, concave, widely spreading, with long linear claws. *Stam.* Filaments ten, awl-shaped, erect, slightly connected at the base, five of them alternately shorter; anthers erect. *Pist.* Germens three, superior, ovate, connected; styles awl-shaped, erect; stigmas capitate or cloven. *Peric.* Capsules three, roundish, not bursting, with two very large, transverse, rounded wings, sometimes united, and a smaller longitudinal central one. *Seeds* solitary, ovate.

Ess. Ch. Calyx in five deep segments, without any honey-pores. Petals roundish, with claws. Filaments connected at the base. Capsules three, closed, single-seeded, with two or three unequal wings.

Obf. This genus has been confounded with *Triopteris*, and it is doubtful whether they ought not to be united, according to the sentiments of Gærtner and Jussieu. The chief difference lies in the two nectariferous glands or pores, said to distinguish the calyx of *Triopteris*, and its narrower, more vertical, and more divided wings.

1. *H. reclina*'a. Jacq. Amer. 137. t. 176. f. 42. Gært. t. 116. Linn. Mant. 240.—Leaves obovate, blunt at each end, smooth beneath.—Gathered by Jacquin in woods at Carthage in South America, flowering in June, and ripening seed in September. It is a weak and trailing *shrub*, seldom rising to the height of more than fifteen feet, and resting its long, pliant, smooth branches upon the neighbouring bushes. The bark is grey. *Leaves* opposite, oblong, somewhat obovate, blunt at each end, entire; smooth beneath; clothed with soft, depressed, scarcely visible hairs above. Their length is from three to six inches. *Footstalks* short, with a pair of brittle-shaped *stipulas* at the base. *Flowers* yellow, beautiful, an inch broad, in very long, compound, terminal clusters.

2. *H. odorata*. Willd. n. 2.—“Leaves ovate, acute; smooth above; downy beneath.”—Found by Isert in Guinea.—A *shrub*. *Leaves* opposite, ovate, acute, entire, veiny; dark

dark green and smooth above; clothed with yellowish shaggy close down beneath. *Clusters* copious at the ends of the branches, axillary, forming a terminal leafy panicle, with downy stalks. The *flowers* are said to be fragrant. *Fruit* exactly like the following. *Willdenow.*

3. *H. pinnata*. Willd. n. 3. (*Flabellaria paniculata*; Cavan. *Diff.* 436. t. 264.)—"Leaves pinnate with an odd one, ovate-oblong, alternate, smooth on both sides."—Gathered by Smeathman at Sierra Leone. About this plant there is much obscurity. Nothing brought by Smeathman answers to it, but some specimens of his well agree with the preceding description, except that the backs of the *leaves* are rather silvery than yellowish. Cavanilles may very reasonably be suspected of a mistake with regard to the leaves, no plant of this natural order being known to have either compound or alternate foliage. We are therefore strongly persuaded that this supposed species is no other than the former.

HIRAM, in *Geography*, a post-town of America, in York county, Maine, containing 184 inhabitants.

HIRARA, in *Zoology*, the name of an animal of the Brasils, much resembling the *hyana*.

HIRCANIA. See HYRCANIA.

HIRCUS, TRAGUS, or Goat, in *Anatomy*, a part of the auricle, or outer ear; being that eminence next the temples.

HIRCUS, in *Astronomy*, a fixed star of the first magnitude, the same with Capella.

HIRCUS is also a denomination given to the rank smell exhaling from the arm-pits; and which has its source in the axillary glands.

HIRCUS is also used by some writers for a comet, encompassed as it were with a mane, seemingly rough and hairy.

HIRE, PHILIP DE LA, in *Biography*, an eminent mathematician and astronomer, was born at Paris in the year 1640. His father took great care in having him instructed in those branches of mathematics which should lay a foundation for the study of the fine arts. After the death of his father, which took place when the son was only seventeen years of age, he passed some years in Italy, spending his time chiefly in the study of the mathematics, to which he devoted himself with the greatest ardour. On his return to Paris he made himself known to the public by the second part of a treatise on stone-cutting, printed in 1672, in continuation of Gerard d'Argues on the same subject. The reputation which he acquired by this performance, he increased by his "Nouvelle Methode en Geometrie pour les Sections des Surfaces coniques et cylindriques," and his treatise "De Cycloide." In the year 1678 he was elected member of the Academy of Sciences, and in the following year he published "Les nouveaux Elemens des Sections Coniques;" "Les lieux Geometriques;" "La Construction ou Execution des Equations." In the same year, under the auspices of Colbert, he commenced an undertaking, conjointly with M. Picard, in order to collect materials for a more correct general chart of the sea-coast of France than had been before laid down: and visited the province of Bretagne, where the two mathematicians made the surveys and observations requisite for their design. In 1680 they proceeded to the coasts of Guienne and Gascogne, and in 1681 M. de la Hire was directed to proceed alone to Calais and Dunkirk, in order to determine the exact positions of those places. On this occasion he took the opportunity of measuring the exact breadth of the straits of Dover, which he found to be 21,360 toises. In 1682 he finished his share of the undertaking, and on his return to Paris he published his treatise

"De Gnomonique," which he reprinted in 1698, in an enlarged form. From this time he frequently appeared before the public in the character of an author. And the diversity of his productions, and his continual employments, give us some idea of the great labour which he must have undergone. His days, says his biographer, were almost uniformly spent in close study, or in discharging professional engagements, and a considerable part of his nights was frequently devoted to astronomical observations. Seldom did he enjoy any other relief from his labours than what arose from the exchange of one employment for another; nevertheless his health was generally good, till within a month of his death, which took place in 1718, after he had completed his 78th year. He was regarded as an honest and disinterested man, and as a good Christian. Moreri. Hutton.

HIRLAW, or HARLEV, in *Geography*, a town of Moldavia, on the Bechlui; 30 miles N.W. of Jassy. N. lat. 47° 24'. E. long. 27° 6'.

HIRMUND. See HEERMUND.

HIRPI, in *Ancient Geography*, a name distinguishing a number of families of Italy, at a small distance from Rome, in the territory of the Falisci, who every year marched over burning wood to mount Soracte, in order to offer a sacrifice in honour of Apollo. It is said that, on this account, they were exempt from going to war, and from all other charges. They are described in Virgil's *Æneid*. l. ii. v. 785:

"Summe Deum, sancti custos Soractis Apollo
Quem primi colimus, cui pineus ardor æcervo
Poscitur, et Medium freti pietate per ignem
Cultores multa premimus vestigia pruna."

Varro says, in speaking of this practice of the Hirpi, that they applied some preparations to their feet in order to prevent their being burnt.

HIRPINI, a people of Italy, who formed a part of the Samnites; and as the term *Hirpus* signified in the Samnite dialect a wolf, they are said to have migrated to their new habitations by tracing the steps of these animals. It was towards the end of the second Punic war, that the Hirpini began to be distinguished from the other Samnites. Their territory comprehended the towns of Beneventum, Candium, Abellinum, and Campsa.

HIRRIA, in *Geography*, a town of Hindoostan, in Rohilcund; 28 miles S. of Pillibeat.

HIRSCHBERG, a town of Bohemia, in the circle of Boleslau; 12 miles N. W. of Jung-Buntzel.—Also, a town of Silesia, in the principality of Jauer, and next to Breslau, the town of the most considerable trade in Silesia, having many manufactures both in the town and neighbouring villages. The churches in the town belong to the Roman Catholics, but the Lutherans have purchased the privilege of erecting a church and school without the walls. It has been once and again burned and pillaged; 20 miles S. W. of Jauer. N. lat. 50° 44'. E. long. 15° 48'.—Also, a town of Saxony, in the Vogtland; 14 miles S. W. of Plauen. N. lat. 50° 20'. E. long. 11° 58'.—Also, a town of Bavaria, in the principality of Aichtadt, 22 miles N. E. of Aichtadt.

HIRSCHFELD, a town of Saxony, in the circle of Erzgebürg; seven miles S. of Zwickau.—Also, a town of Lusatia, on the Neisse; 40 miles E. of Dresden. N. lat. 50° 56'. E. long. 14° 59'.

HIRSCHOLM, a town of Denmark, with a castle, in the island of Zealand, where Christian VI. died in 1746; 12 miles N. of Copenhagen.

HIRSEL, in *Rural Economy*, a term employed among the

the northern stock-masters, to denote the division of sheep into particular kinds.

HIRSON, in *Geography*, a town of France, in the department of the Aisne, and chief place of a canton, in the district of Vervins; four miles N. E. of Vervins. The place contains 2150, and the canton 11,127 inhabitants, on a territory of 185 kilometres, in 13 communes.

HIRST, in *Mining*, Ridge or Sow's-back, is applied by the colliers of Scotland, (see Willein's Min. Kin. 2d edit. i. 90.) to the tops or higher parts of undulating strata, or those which lay in **HILL and Trough**, see that article.

HIRTELLA, in *Botany*, so named by Linnæus, as he himself informs us, in the *Hortus Cliffortianus*, p. 17, from *hirtus*, hairy, because of the hairiness of its young branches.—Linn. Gen. 110. Schreb. 153, 824. Willd. v. 1. 1151. Mart. Mill. Dict. v. 2. Ait. Hort. Kew. ed. 2. v. 2. 40. Jacq. Amer. 8. Juss. 340. Lamarck. Illustr. t. 138.—Class and order, *Pentandria Monogynia*. Nat. Ord. *Senticosa*, Linn. *Rosacee*, Juss.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, its border in five deep, nearly ovate, spreading, unequal, permanent segments. *Cor.* Petals five, roundish, concave, slightly spreading, equal, deciduous. *Stam.* Filaments five, sometimes but three, inserted into the rim of the calyx on one side, very long, brittle-shaped, flatish, permanent, at length rolled in spirally; anthers orbicular, of two lobes. *Pist.* Germen superior, roundish, compressed and sloping, hairy; style thread-shaped, as long as the stamens, arising from the depressed side of the germen opposite to the stamens, near the bottom; stigma simple. *Peric.* Berry oval, swelling upwards, slightly compressed, somewhat triangular, the style and much of the hairiness which clothed the germen remaining attached to its base on one side. *Seed* one, large, shaped like the pericarp. Aublet describes it as a nut of two cells.

Ess. Ch. Calyx with five permanent segments. Petals five. Filaments inserted into the rim of the calyx, very long, permanent, spiral. Style lateral. Berry superior, with one seed.

The history of the species is singularly confused. We shall endeavour to collect under one view all that has been said of them.

1. *H. americana*. Willd. n. 1. Swartz. Obs. 94. Aubl. Guian. v. 1. 247. t. 98.—Clusters upright, simple, axillary; their common stalk villose. Leaves oblong, pointed. Stamens five.—Native of Cayenne and Guiana. A tree 25 feet high or more, and six inches in diameter, with a reddish bark. Branches long, slender, scattered, and subdivided. Leaves alternate, oval, long-pointed, entire, smooth and green; the largest of them six inches long by 2½ broad. Footstalks very short, with a pair of awl-shaped, downy, deciduous stipulas. Clusters axillary, long, hairy, reddish; their partial stalks alternate, with one or two little scale-like bractæas at their base. Segments of the calyx reflexed. Petals blueish, emarginate. Stamens five, all on one side of the flower, very long, blueish upwards, as are likewise their anthers. Style rough in its lower part with red hairs. This tree flowers in March. Swartz and Willdenow seem to depend entirely on Aublet for this species, yet they take it for the original one of Linnæus, which he saw in Piso's herbarium, and which had five stamens. However this may be, what he describes in the *Hortus Cliffortianus* had but three, and should seem to be different. What he quotes in the *Species Plantarum*, ed. 2: 290. from Marcgræve's Brasil, t. 78. f. 2, and which he says is bad, does not at all agree with any *Hirtella*.

2. *H. triandra*. Swartz. Prodr. 51. Ind. Occ. v. 1. 508. (*H. americana*; Jacq. Amer. 8. t. 8.)—Clusters compound,

terminal, solitary, downy, loosely spreading. Leaves elliptic-oblong, pointed, naked on both sides. Stamens three.—Native of woods, by the sides of torrents in Jamaica, Hispaniola, and other parts of the West Indies, flowering in April and May. The branches are besprinkled with minute warts, their young extremities clothed with depressed fattin-like down. Leaves about three inches long, nearly elliptical; with a taper point, contracted, and somewhat rounded at their base, naked and shining; but rather rough to the touch. Cluster five or six inches long, simple in Jacquin's figure, very compound in our specimens. Fruit an inch long, or more, slightly hairy. Willdenow considers this as the *Hirtella* of Hort. Cliff. Swartz says the petals are white, stamens three, with the rudiments of from two to five minute filaments in the vacant space opposite to them.

3. *H. pendula*. Herb. Linn. fil.—Clusters compound, terminal, long, pendulous, hairy. Leaves oblong, pointed; heart-shaped at the base; downy beneath. Stamens three.—Native of the West Indies? The leaves exactly resemble those in Aublet's figure of *H. americana*, both in size and figure, but are rough with rusty down at the back. The clusters are above a foot long, solitary, terminal, stalked, clothed all over with dense, prominent, rusty, short hairs; their partial stalks generally cloven and two-flowered, the lower ones many of them much more compound and forked. Calyx very hairy; silky within. Stamens three, long and twisted, as well as the style, which is quite smooth throughout. Fruit above an inch long, smooth, obovate, compressed upward, and emarginate. Fine specimens of this, in the herbarium of the younger Linnæus, appear to have made a part of a numerous collection of West Indian plants given him, when in England, by sir Joseph Banks. Yet we find no description in Swartz or any other author applicable to them, nor does the above name any where occur.

4. *H. paniculata*. Swartz. Prodr. 51. Ind. Occ. v. 1. 510. Vahl. Symb. fasc. 2. 43. t. 31.—Clusters compound, terminal, erect, hairy, sometimes aggregate. Leaves oval, acute, shining; their ribs hairy beneath. Stamens five or six.—Native of Guiana. The leaves are peculiarly shining on both sides, though their colour is paler at the back, and the ribs there hairy. In length they greatly vary, but scarcely in breadth. The young branches, flower-stalks, and calyx, are bristly with long prominent tawny hairs. Stamens in our specimens six. Some of Linnæus's remarks appear to indicate this species as what he had seen.

HIRTIUS, **AULUS**, in *Biography*, was an officer under Julius Cæsar, and wrote a supplementary part of the Commentaries published in his name. The books composed by Hirtius are the eighth of the Gallic war, and those of the Alexandrine and African wars. Of the two latter he received his information partly from Cæsar's own mouth. His style is good, but his narrative is reckoned less clear than that of Cæsar himself. He was made consul, together with Vibius Pansa in the year B. C. 43, and the conduct of the war against Antony was committed to them in conjunction with the young Octavianus. He gave Antony a considerable check in the neighbourhood of Mutina, but his ardour carrying him too far into the enemy's quarters, he received a wound which laid him dead on the spot. Univer. Hist.

HIRUDELLA MARINA, in *Natural History*, the name of a very remarkable little animal of the leech kind. The body of this creature is roundish and oblong, and adorned with many longitudinal lines or furrows; it is about an inch in length, and is of a greyish colour, and somewhat transparent; the bowels are seen through the skin, and appear at first sight like streaks on its surface; in the middle of the belly

belly there is a remarkable protuberance, which, when closely examined, is found to be a muscular body in form of a spherical bladder; this, when most distended, has the appearance of a spherical air-pump, and has all the properties of that machine, to be employed for the service of the animal, and at its pleasure. It resembles, in its common figure, the cup of an acorn, with the mouth a little contracted. The head of the animal is of the same figure with that of the common leech, and serves to suck the juices of other animals in the same manner as in that insect. The part of the body which reaches from the head to the middle protuberance is of a very irregular form, frequently in motion, and continually changing its figure; but the other part moves more slowly, and less frequently, and preserves its shape unaltered. The protuberance has two motions, expansion and undulation.

When the creature has a mind to fix itself any where, it does it by means of this protuberance, which it applies closely down to the substance, and void of air. Hence the external air so firmly presses its sides against the substance, that it is not easy to remove it. When the creature changes its place, it draws the head round to the protuberance, and loosens it so as to be able to change its place as it has occasion.

When this creature is kept out of water, it dies in a few hours; and when after being thus kept out a few minutes, it is put into sea-water, it immediately darts out a fine green thread from its mouth; this it usually makes of the length of its body, or thereabouts, though it varies it occasionally; and by means of this it suspends its body any length that it pleases in the water. It seems to be calculated only for living in the bodies of fish, for the sea-water soon kills it; and it is observed to diminish its bulk very sensibly all the time that it is kept in it. Phil. Trans. No 410.

HIRUDO, in *Zoology*, a genus of *Vermes*, the body of which is oblong, truncated at both ends, unarmed, and cartilaginous; and the progressive motion is effected by dilating the head and tail, and contracting itself into an arch. Linn. To this essential character it should be added, that the two extremities of the true hirudo are capable of being dilated into a fleshy disk, by means of which it can affix itself firmly to the skin of animals, and the mouth, which is triangular, situated under the anterior part of the body.

This is a genus of aquatic worms, known in England by the name of leech; several of its species inhabit our waters, and two in particular, the common or medicinal leech, and the horse leech, are so well known as to be familiar to every one. The body in the leech tribe is composed of a great number of rings; the skin more or less smooth, and the head, when in a state of contraction, more pointed than the tail; the opening of the mouth is triangular, and armed with three strong teeth, besides a numerous assemblage of smaller ones, and a sucker at the bottom, by the assistance of which it draws the blood from the wound inflicted by this formidable armament of teeth in the flesh of the bleeding animal. The teeth of the leech are powerful enough to penetrate not only through the skin of man, but also that of horses and cattle, examples of which very frequently occur when the latter bathe in the water. The hirudo tribe respire by the mouth. The greater portion of the species are furnished with eyes, the number of which however varies according to the species, being sometimes eight, in others six, and again in others no more than two. Every individual of the leech tribe, like those of the snail, is complete in its own conformation, being, as Redi observes, of both sexes, and often producing their young alive. Their common sub-

sistence is the blood of quadrupeds, and other sanguineous animals which they casually meet with in the water, and which, as they can bear an abstinence of some weeks or even months, they generally find in sufficient abundance. Should it prove otherwise they prey on worms and the larvæ of aquatic insects, which they suck to death, as they subsist only on their fluids, and the small portion of blood the vital parts of some particular kinds afford. The leech swims in the manner of the eel, and some of the species live in salt waters, though the greater number are confined entirely to the fresh waters, some preferring the clear and pure element, and others the stagnant pools and ditches, ponds, and marshes which most abound with aquatic plants. There is only one species (the common kind), that can be applied with safety to medicinal purposes.

Species.

MEDICINALIS. Elongated, blackish, lineated above with yellowish; beneath spotted with yellow. *Hirudo medicinalis*, Ray. *Hirudo major et varia*, Gess. *Medicinal leech*.

Inhabits stagnant ponds and ditches in Europe; the body is composed above of numerous annular wrinkles, which are contractile at pleasure, and marked with variegated lines; mouth smaller than the tail; the last composed of an annular muscle, by which it has the power of fastening its body firmly to any smooth surface. The medicinal virtues of this species as a phlebotomist is well known.

SANGUISUGA. Elongated, olive brown, with an ochre-yellow marginal band. Linn. *Hirudo maxime vulgaris*, Ray. *Horse leech*.

Abundant in stagnant waters; the length from four to six inches; the body above dull olive black or brown; beneath paler, with sometimes a few black spots, and tail thicker than the head. Sucks blood with great avidity and in large quantities.

LINEATA. Elongated and grey, with four dorsal lines disposed longitudinally. Müll.

A rare species, found early in the spring in stagnant waters; the length about an inch and a half; body annulated with numerous wrinkles, and six deep black eyes placed in a double row.

VULGARIS. Elongated, yellow-brown, with eight eyes disposed in a lunate series. Müll. *Hirudo oöculata*, Bergm. &c.

Length fifteen lines, the body sometimes brown, and without spots; sometimes sprinkled above with yellow dots, or with dots of black, or varied in the middle with a knotty line, and a lateral blackish one; and sometimes yellowish with longitudinal lineations, the middle knotty, and the lateral ones with remote red dots; eyes eight in general, or sometimes nine.

STAGNALIS. Elongated, cinereous, with two eyes. *Hirudo stagnalis*, Linn. *Hirudo bioculata*, Müll.

Body whitish, pellucid; sprinkled with cinereous dots and plaited at the sides; eggs about forty, surrounded by a pellucid circle. The young, after exclusion, adhere by their tails to the abdomen of the parent. Length nine lines.

COMPLANATA. Body dilated, cinereous, with a double tuberculated line on the back; the margin serrated. Müll. *Hirudo lateribus attenuatis*, Hill. *Hirudo sex-oculata*, Bergm.

Length four lines, the body with transverse bands, composed of three pale lines, the margin whitish; body beneath grey; head pointed and white, with six eyes; tail orbicular and cinereous. Found in shallow streams.

HETEROCLYTA. Dilated, pellucid and yellow, with entire margin. *Hirudo heteroclyta hyalina pollice lutea*, Linn. *Hirudo hyalina*, Müll.

Body flattish, the anterior part pointed, posterior rather broad, and marked above with numerous fine longitudinal striæ of black specks, and remote brownish ones; head white, eyes four or six; eggs numerous, spherical, green and surrounded with a pellucid ring; the young that escape first are yellow, the latter green.

GEOMETRA. Elongated, yellowish, with a pinnate white dorsal line. *Hirudo geometra, teres, extremitatibus dilatatis*, Linn. *Hirudo piscium*, Müll. *Hirudo ore caudaque ampla*, Frisch.

Inhabits fresh waters, and fixes itself to the bodies of fishes; eyes four, colours varying.

Inhabits fresh waters, and fixes itself on the bodies of trout and other fish after the spawning season; length eight lines, its progressive motion like the movement of a compass in measuring; body tapering before, and very broad at the tail; eyes four; colour variable.

TESSULATA. Cinereous with a tessellated margin; eyes eight, in a double longitudinal row. Müll.

Length eighteen lines; the body dilated and covered with black specks; above with orange and white spots; beneath grey, with two rounded white spots in the middle. Found in rivulets.

MARGINATA. Dilated, brown, with a tessellated margin, and four eyes. Müll.

Inhabits rivers, and resembles the last; the length ten lines; head obtuse before and narrowed behind, white, pellucid, and marked with two transverse brown bands; abdomen reddish brown with very minute striæ meeting beneath in doubled brown lines; back with five rows of whitish dots, the lateral margin white, with a double brown line divided into square patches; tail orbicular and pale, with brown spots on the margin.

GROSSA. Dilated, yellowish, and divided on the forepart. Müll.

A marine species found sometimes within the shell of *Venus exoleta*; the length about twelve lines, the breadth seven. The body marked with fine white striæ, the anterior part narrower and obtuse; eggs very numerous, spherical, and swimming in a gelatinous fluid.

HIPPOGLOSSI. Dilated, whitish, with a double white eye in the middle of the body. Müll.

Inhabits the sea and infests fishes, being often fixed to the skin of the turbot and holibuts. The body is oval, depressed, pellucid, a little pointed before, and ending in a globular ring behind; head somewhat triangular with a cinereous spot each side; eyes not visible; tail with a row of tubercles beneath from the centre, and towards the middle two hooks.

MURICATA. Body round, tapering, tuberculated, and furnished with two short horns on the head. Gmel.

A marine species that infests fishes, leaving a black mark on the spot to which it adheres; the head is larger than the tail; body strongly annulated and tuberculated on the rings; the tail much dilated.

CRENATA. Slightly depressed, sub-oval, with transverse annular striæ, and crenulated margin. Linn. Transf.

Found in shallow streams among aquatic plants. The colour greenish, inclining to ash, the upper surface somewhat convex; its interanea are very visible by means of its vitreous transparency, and appear like so many granula; eyes two and much approximated.

It appears to us not altogether improbable, that among the numbers of species above described, some few at least will be hereafter found to belong rather to the genus *Planaria*, than that of *Hirudo*.

In the first volume of the Linnæan Transactions Dr. Shaw describes an animal of the mollusca family, under the title of *hirudo viridis*, and which, from a note annexed to another paper, in the same volume of the same work, that author afterwards considered referable to the planaria tribe. The correction of this is material, as some writers, depending on the former authority, still retain it among the hirudines. In the removal of this species to the genus planaria, it will be proper to change the trivial appellation by which it was before distinguished, because another species of planaria, very different from the animal described by Dr. Shaw, has been previously designated by the appellation of *viridis*.

The two kinds of vermes introduced to notice by the Rev. Mr. Kirby, in the second volume of the Linnæan Transactions, under the names of *hirudo alba*, and *hirudo fusca*, are, perhaps, planariæ likewise; nor are we entirely satisfied that the species *crenata*, of the same author, and which is also described in the same paper, is strictly of the hirudo tribe. Mr. Kirby himself suggests the idea, that they may be sufficiently distinct to constitute a new genus. Though we agree with Mr. Kirby in this respect, and are inclined with Dr. Shaw to think, they may with propriety be referred to the planaria genus, we cannot so far assent to the opinion of Dr. Shaw, expressed in the note (p. 325.) as to believe the *H. crenata* to be the young of the Linnæan *hirudo geometra*. This last is delineated in all its states of growth by Roefel under the title of *hirudo piscium*, (t. 3.) and the slightest comparison of these figures, with those of *hirudo crenata* in the Linnæan Transactions, will be sufficient, we imagine, to discountenance such conjecture. There is one distinction, at once so obvious, that we cannot refrain to mention it; this consists in the number of the eyes in the two animals, the *hirudo geometra* possessing no less than four, and the species *crenata* no more than two.

We shall finally direct our attention to the *hirudo branchiata* of the Linnæan Transactions, (vol. i.) a species of vermes, which is not, we believe, conigned with any absolute certainty to the genus at present under consideration: in this respect, at least, it is confessedly ambiguous, and as such, appears to have excited some little curiosity in the minds of continental naturalists. The observations of Bosc, on this particular subject, appear to us rather interesting and worthy of being transcribed, and this, the more especially, since they do not seem to place the account of this singular animal, as originally given by its English observer, in that clear and satisfactory point of view we could wish for, or expect.

“On trouve (says M. Bosc) dans le premier volume des Actes de la Société Linnéenne de Londres, la description et la figure d'une sangsue trouvée sur la tortue de mer, qui a de chaque côté sept branchies rameuses fort saillantes. Il est évident que l'on doit en former un genre nouveau, surtout si ce sont réellement des branchies; mais Mentzies, l'auteur de ce mémoire, n'entre pas dans des détails suffisans pour pouvoir l'affirmer d'une manière positive.” We admit with M. Bosc, that the ingenious writer, to whom we are indebted for the discovery of this curious creature, does not enter so fully into detail as to enable us to ascertain the genus to which it may belong, or rather, we might say, to authorise its removal into any other genus, were we disposed to consider its present situation improper. The conclusion of Bosc, that it does not appertain to the *hirudo* genus, is perhaps too incautiously assumed: the animal, he tells us, has seven “branchies” on each side, and it is upon the supposed existence of these, that he reasons on the propriety of its forming a new genus, though he himself, at the same time,

time, doubts whether the lateral appendages to which he alludes be "branchiæ" or not. The existence of such branchiæ would unquestionably be sufficiently decisive to remove it from the hirudo tribe, since the latter respire by the mouth, but as to the actual existence of such branchiæ it is possible we may misconceive the fact: or indeed the ramose appendages to which he adverts may be truly such, for there is nothing, at least, in the description given by Mr. Menzies, either to support or contradict this idea.

The description of this creature, as given by Mr. Menzies, is briefly as follows: *H. depressa*, attenuata, albida, fetis lateralibus ramosis utrinque 7; interaneis fuscis, bifidis, perlucentibus; or, as may be rendered to the English reader: depressed, attenuated, whitish, with seven ramose bristles each side; intestines brown, bifid, and pellucid; and in the general account accompanying this specific description, these lateral appendages are said to be soft, pellucid, branchy bristles.

Thus it is not apparent, from any observation that has fallen from Mr. Menzies, that these lateral appendages are real branchiæ, or respiratory organs: having stated this, it is fair to add, that the conclusion of Bosc, though not to be assumed from the remarks of its original describer, may be nevertheless accurate, and probably is so. The appearance of the animal, if any confidence can be placed in the delineation, seems to favour this conception. The magnified figure of one of these lateral ramose appendages, as shewn in the plate in particular, accords exceedingly in appearance with the breathing organs of some of the mollusca tribe, as exemplified in various species of the nereides, aphroditæ, and others; and should the animal really possess such breathing organs, its internal organization must be altogether so very different from that of the hirundines, that there can be no doubt of the propriety of instituting a new genus for its reception.

HIRVENSELMI, in *Geography*, a town of Sweden, in Tavastland; 75 miles E. of Tavasthus.

HIRUNDO, in *Ornithology*, a genus of the Passerine order, distinguished by the following essential character. The bill is small, weak, curved, subulate, and depressed at the base; gape larger than the head; tongue short, broad, and bifid; wings long; tail mostly forked.

This genus is divided by some writers into two sections, according to the position of the feet, the first having three toes placed forwards and one behind; the other with all the toes placed forwards; the former are the *swallows*, the other the *swifts* of English authors. In both the nostrils are open, and the legs short.

Most of these birds frequent marshy places, and skim the surface of the ground and water in search of insects, which they catch on the wing with great dexterity, by means of the enormous gape of their jaws. Insects are their peculiar and almost exclusive food, and it is for this reason swallows are regarded with a degree of superstitious tenderness in every country that abounds with noxious creatures of that description. Swallows are equally incapable of bearing the extremes of heat and cold, and on that account, except in very temperate weather, they are oftener seen on the wing in the morning before the heat of the day becomes oppressive, and in the evenings towards sunset than at any other times.

These birds walk indifferently owing to the shortness of their legs, and from the same cause rise off the ground, or any low situation with difficulty; and hence when they go to rest, they almost invariably suspend themselves against the sides of walls or other elevations, from which they are enabled to renew their aerial evolutions with facility.

The annual migration of the swallow has been long the

theme of curious observation among naturalists, and few topics of this kind have met with more ample discussion, or given birth to more extraordinary opinions. The truth, however, is, that the migrations of the swallows, like those of most other birds of passage, may be easily explained, since nature does not in this instance, more than any other, deviate from her ordinary course, and of this we have the most positive assurances both in reason and in fact. Nearly all the species of the swallow-tribe are found in the two great continents, remaining in the northern part during summer, appearing near the equinox in spring, and again retiring to more temperate climates as the autumn approaches. Part remain in hot countries all the year, as in Egypt, Æthiopia, Libya, and the countries between the tropics. They regularly pass alternately across the Archipelago from Europe to Africa, and from Africa to Europe as the seasons change; this is the general progress of all the species of the swallow-tribe that inhabit Europe; and the same course of migration from one part of the world to another is observable in the common swallow, the species whose migrations have excited such very peculiar attention among modern writers as well as those of remote antiquity; we shall enter more fully into the details of this interesting subject under the article SWALLOW.

The hirundo genus, including the swallow and the swift family, contains about forty species, the greater part of which are swallows, the swifts being few in number.

Species.

RUSTICA. Front and chin chestnut; tail-feathers, the two middle ones excepted, with a white spot. Linn. Kram &c. *Hirundo domestica*, Gessn. &c. *L'Hirondelle de Cheminée*, Briss. *Common or chimney swallow*, Will. Donov. Br. Birds, &c.

The common swallow is an inhabitant of most parts of the globe, being of the migratory kind, and visiting different countries at particular seasons. About the latter end of March it arrives in England, and remains till September, during which intervening period it frequents houses, under the roofs, or in the chimnies of which it usually breeds; the nest is composed of mud, intermixed with chaff, feathers, &c. and contains from four to six eggs of a whitish colour speckled with red. Previously to its departure it assembles in vast flocks on the tops of houses, churches, or other elevations, from whence they all depart in a body with extreme regularity, and as it appears under the directions of particular leaders. Those from Europe pass the winter in Africa, South America, India, and other similar climates, returning again towards the north in spring. Like the rest of its tribe the food of the swallow consists of insects, which it takes on the wing. This hirundo (says an ingenious writer) though called the chimney-swallow, by no means builds altogether in chimnies, but often within barns and out-houses against the rafters. In Sweden she builds in barns, and is called *ladu swala*, (the barn swallow.) Besides, in the warmer parts of Europe there are no chimnies to houses; and in these countries she constructs her nest in porches, gateways, galleries, and open halls. With us the species breeds in chimnies, and loves to haunt those stacks where a constant fire is kept, no doubt for the sake of the warmth. But then it cannot subsist in the shaft at the bottom of which the fire is burning; it prefers one adjoining, in which it builds its nest about five or six feet below the chimney opening at the top. The nest is constructed of mud mixed with short pieces of straw, in the form of the half of a deep dish, and is lined with feathers and grass, which it catches floating in the air. The address with which

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the swallow ascends and descends with security through so narrow a pass is wonderful. When hovering over the mouth of the funnel, the vibration of her wings, acting on the confined air, occasion a rumbling noise like thunder. It is not improbable that the dam submits to this inconvenient situation so low in the shaft, in order to secure her brood from rapacious birds, and particularly owls, which frequently fall down chimnies, perhaps in attempting to get at these nestlings. The first brood of young are hatched the last week in June, or the first week in July. The progressive method by which the young are introduced into life is very amusing; first they emerge from the shaft with difficulty enough, and often fall down into the room below; for a day or two they are fed on the chimney top, and then are conducted to the dead leafless bough of some tree, where, sitting in a row, they are attended with great assiduity, and may then be called porchers. In a day or two more they become flyers, but are still unable to take their own food, therefore they play about near the place where the dams are hawking for flies, and when a mouthful is collected, at a certain signal given, the dam and the nestling advance rising towards each other, and meeting at an angle, the young one all the while uttering a quick note of gratitude and complacency. All the summer long is the swallow a most instructive pattern of unwearied industry and affection, for from morning to night while there is a family to be supported she spends the whole day in skimming close to the ground, and in the most sudden and lively evolutions. Avenues and long walks under hedges, and pasture fields, and mown meadows where cattle graze, are her delight, especially if there are trees interspersed; because in such places insects abound. The swallow is the first to announce the approach of birds of prey to the house martin and other little birds, warning them of danger by its shrill alarming note, and associating them in a body to pursue and buffet the intruder. The swallows drink as they fly sipping the surface of the water, and in hot weather are often seen dropping into the water many times together, to wash and cool themselves. The song of this bird is very pleasing.

The swallow, though generally regarded in most countries with a kind of superstitious veneration for its utility in destroying pernicious insects, is in Italy and some other parts esteemed a bird of chase, and the hunting of them at particular seasons a favourite diversion. The flesh is considered as a delicacy little inferior to that of the ortolan.

TAHITICA. Blackish-brown with a purple gloss above; front and neck beneath purple-tawny; belly and vent sooty; tail, bill, and legs black. Gmel. *Otaheite swallow*, Lath. Length five inches; the bill black; irides brown. Inhabits the mountainous parts of Otaheite.

ESCULENTA. All the tail-feathers with a white spot. Osbeck. *Hirundo riparia Cochinchinensis*, Briss. *Hirundo nidis edulibus*, Bont. *Apus marina*, Rumpf. *Salangane*, Buff. *Esculent swallow*.

The esculent swallow is said to be less than the wren, and only two inches and a quarter in length; the bill black; irides yellow; upper part of the body brown; the under whitish; tail forked, with each of the feathers white at the tip; and the legs brown. This description was taken by Brisson from a drawing of the bird by Mr. Poivre, the figure of which is repeated in the ornithology of Brisson. Mr. Marsden, however, describes the bird to be about the size of the common martin, and Dr. Latham, when he published his Synopsis, was inclined to think the bird at least of that size; this he was induced to believe from the size of the eggs which accompany the nest of the esculent swallow,

now in the British Museum, and which are as large as those of the martin, and of the same colour.

The nests of these birds, in shape resembling a lemon cut down the middle, and composed of gelatinous substances alone, render the species worthy of particular curiosity; the nest itself being not only edible, but considered as one of the greatest delicacies of the table by the luxurious Asiatics. This nest, the weight of which is about half an ounce, adheres by one side to the rock. Authors differ greatly as to the materials of which it is composed; Osbeck and others imagine it to consist of sea-worms of the mollusca order: Forrester conceives it to be the sea-qualm, a sort of cuttle-fish found in those seas, or a glutinous sea-plant, called agal-agal. Or it has been again supposed they rob other birds of their eggs, and apply the white of them to that purpose. The fabrication of these nests is very obvious, being composed of several concentric layers, which are seen distinctly when the nest is broken transversely. These nests are found in vast numbers in certain caverns in the various islands of the Soolo Archipelago, situated between the longitude 117° and 120° ; and latitude 5° and 7° ; particularly in three small islands, or rather rocks, in the caverns of which the nests are found fixed to the sides in astonishing numbers. They are also found in amazing quantities on a small island called Töc, in the straits of Sunda; the caverns of which are lined with the nests; but no where in greater abundance than about Croee, near the south end of Sumatra, four miles up a river of that name. But they are not peculiar to the above places; for they are likewise common from Java to CochinChina on the north, and from the point of Sumatra west, to New Guinea on the east; where the sea is said to be covered with a viscous substance, like half-melted glue, and which some suppose the birds either take up from the surface by means of the bill during flight, or pick up from the rocks when left there by the waves.

The nests are of two colours, the one whitish, the other black, and apparently dirty. The whitish kind is perfectly clear, and is applied to the purposes of thickening broths, and ragouts made of chickens, and to which they contribute, it is said, an exquisite flavour. These nests are first soaked in water to soften, are then pulled to pieces, and, after being mixed with ginseng, are put into the body of the fowl. The whole is then stewed in a pot with a sufficient quantity of water, over a fire of coals all night, and the morning following it is fit to be eaten. The best nests are of a pure yellowish white, and half transparent, and these sell in China from one thousand to fifteen hundred dollars the *pekul*, a weight equal to about 123lbs. English. Those of a black colour being dirty, are worth but about twenty dollars the *pekul*, being serviceable only in making glue. The gatherers take all they can, in the hopes of compelling the birds to make fresh nests, and thus render their next gathering more profitable. The Dutch alone are said, a few years ago, to export from Batavia a thousand pekuls of these nests every year, the whole of which are brought from the isles of CochinChina, and those lying to the eastward. At Sumatra the bird is known by the name of *layong-layong*.

The above-mentioned nests, (examples of which occur pretty frequently in the cabinets of the curious,) are supposed to belong to the bird described by Brisson, but of this we are not entirely assured: it was before observed, that the bird described by Marsden was far superior in size to that mentioned by Brisson, and from the recent observations of writers, it does really appear these nests may be the fabrication of some other bird with which we are at present unacquainted. The idea entertained by sir George Staunton, (Emb. China) seems to be that these nests may be the produce

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duce of more than one species of swallow, and this opinion is extremely plausible, though it must be at the same time admitted the subject is too much enveloped in obscurity to authorize that conclusion. In confirmation of the suggestion we may add that it is not long since another sort of swallow, very different from that recorded by Brisson, was brought, with the nest, as the excellent swallow of the Indies, to Sir Joseph Banks; and which in size agreed much better with that described by Marsden, than the bird designed by Poivre. An account of this newly observed kind is inserted in the second Supplement of Dr. Latham's work: its size is equal to that of the common swallow; the beak small and black, and the opening ample: the whole of the plumage above is glossy black; beneath ash; wings long; tail forked, with all the feathers rounded at the tip; and the legs blackish.

BORBONICA. Blackish fuscous, beneath grey, varied with longitudinal brown spots; tail equal; bill and legs black. Gmel. *Grande hirondelle*, &c. Buff. *Wheat swallow*.

Size of the swift; the bill black, and the tail even at the end. Inhabits the isle of France, where it is known by the name of *hirondelle des blés*, or wheat swallow, from its frequenting places newly sown with that grain, and feeding on it. The species also feeds on insects, in quest of which it often follows herds of cattle, and relieves them from these winged tormentors, by devouring them. The female lays two eggs, of a grey colour, dotted with brown; the nest is composed of straw and feathers. There is a variety of this bird having the three outer tail-feathers whitish at the tips.

FRANÇICA. Blackish, beneath and rump whitish or grey. Gmel. *Hirondelle de Bourbon*, Buff. *Grey-rumped swallow*, Lath.

Length four inches and a quarter; inhabits the isle of France, but is not common, and is found chiefly in the neighbourhood of fresh waters.

AMERICANA. Blackish fuscous, glossed with blue and green; beneath whitish; rump and vent rufous; quill-feathers whitish within; tail equal. Gmel. *Hirondelle à croupion roux et queue carrée*, Buff. *Rufous-rumped swallow*, Lath.

Inhabits about the river Plata, in South America; length six inches and a half. A variety of this bird has the throat rufous.

URBICA. Blackish; beneath white; tail-feathers without spots. Scop. &c. *Hirundo minor s. rustica*, Brisson. *Hirundo agrostis*, Gessn. *Petit martinet*, Buff. *Hauffschwalbe*, Frisch. *Martin, martinet, or marikett*, Willd. Donovan. Br. Birds, &c.

This species is more frequent than the common swallow; the length five inches and a half; its bill black; mouth yellow; rump white; and legs covered with short white down. This bird is equally common throughout most parts of Europe, and extends over great part of America: it builds under the eaves of houses, but not in chimneys, like the common swallow. It lays twice in the year, from five to three, or only two eggs, the colour of which are white, with the broader end rather dusky.

PANAYANA. Black; beneath white; frontal spot and chin rufous yellow; collar black. Gmel. *Hirondelle d'Anisique*, Sonner. *Panayan swallow*, Lath.

The size of the sand martin; bill black; wings and tail of equal length; the legs black. Inhabits the island of Panay, one of the Philippines.

RUFIA. Shining black; beneath rufous; front whitish. Gmel. *Hirondelle à ventre roux de Cayenne*, Buff. *Rufous-bellied swallow*, Lath.

CAPENSIS. Blackish-blue, beneath yellowish, with black-

ish streaks; cap rufous; lateral tail-feathers with a white spot. Gmel. *Hirondelle au capuchon roux*, Buff. *Cape swallow*.

Native of the Cape of Good Hope; the length seven inches; bill half an inch in length, and black; the legs dusky. It is said to build its nest in houses against the ceilings, the form rounded with a cylindrical entrance, the exterior substance mud, with an inner lining of feathers. The female lays four or five eggs, which are speckled.

RIPARIA. Cinereous; chin and belly white. Linn. *L'Hirondelle de rivage*, Brisson. *Hirundo riparia*, Alder. *Sand martin, or Shore-bird*, Will. Donovan. Br. Birds, &c.

Inhabits sandy places in Europe and America; the length four inches and three quarters; bill blackish; legs blackish, and feathered behind. The female lays from five to six eggs, of a clear white colour, either in a nest, which it builds of dried fibres, straw, and feathers; or in hollows of trees, or cavities in the sand, and sometimes in the steep shores of lakes and rivers.

RUPESSTRIS. Mouse-colour, beneath whitish; tail subequal, the feathers with a white spot on the inner web. Scop. *Rock swallow*.

Makes its nest of clay in the hollows of rocks, and inhabits Carniola. Size of the common martin.

MONTANA. Mouse colour, beneath rufous; quill and tail-feathers grey brown, edged with rufous, the latter, except the middle and outer ones, with a white spot within. Gmel. *Hirondelle grise des rochers*, Buff. *Cragg swallow*, Lath. *Mountain swallow*.

Inhabits the mountains of Auvergne and Dauphiné, and also those of Savoy, arriving at the latter about the middle of April, and departing in the middle of August. The length is five inches and a half; the bill black; legs covered with grey down and mixed with brown, claws black.

PURPUREA. Entirely violet; tail forked, Kalm. *Hirundo opus Carolinensis*, Brisson. *Purple martin*, Catelb. *Purple swift*, Arct. Zool. *Purple swallow*, Lath.

Length seven inches and three quarters; bill black; legs and claws blackish; the plumage of the male richly glossed with purple, that of the female dusky brown. The species passes the summer in Carolina and Virginia, retiring to warmer climates at the approach of winter.

SUBIS. Blueish black; beneath and mouth whitish-ash. Gmel. *Hirundo freti Hudsonis*, Brisson. *Hirondelle de la Baie d'Hudson*, Buff. *Great American martin*, Edw. Hudson's Bay swallow.

Rather larger than the swallow; bill black; quills, and forked tail blackish edged.

SENEGALENSIS. Shining-black; beneath and rump rufous. Gmel. *Grande hirondelle à ventre roux du Senegal*, Buff. *Senegal swallow*.

Length eight inches and a half; the bill black and dusky; rufous on the throat, and under the wings palest. Native of Senegal.

AMBROSIACA. Greyish brown; bill blackish; legs fuscous. Gmel. *Hirundo riparia senegalensis*, Brisson. *Hirondelle ambrée*, Buff. *Ambergris swallow*.

Size of a wren; the length five inches and a half; bill half an inch long and black; tail very forked; the legs black. According to Seba the species is said to emit a powerful scent, resembling that of ambergris. The species inhabits Senegal. There is a variety of this species, the plumage of which is pale ash, beneath paler.

FASCIATA. Black; transverse band on the belly and spot on the outer part of the thighs white. Gmel. *Hirondelle à ceinture blanche*, Buff. *White-bellied swallow*, Lath.

L. Inhabits

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Inhabits near rivers in Cayenne and Guiana: the length six inches.

TAPERA. Tail-feathers equal; body blackish, beneath white. Gmel. *Hirundo Americana*, Briss. *Tapera*, Sloane, Maregr. &c. *Tapere*, Buff. *Tapera swallow*.

Length five inches and three quarters; the bill black; throat and breast grey brown; quill and tail-feathers blackish brown; tail slightly forked; legs brown. Brisson describes the species as a native of Brazil and Cayenne, and Sloane as an inhabitant of Jamaica, being a bird of passage, and remaining on the island six months of the year.

TORQUATA. Brown, beneath white; tail even; peccoral band brown; between the bill and eyes a white spot. Gmel. *Hirondelle brune et blanche à ceinture brune*, Buff. *Brown collared swallow*.

Native of the Cape of Good Hope. Length eight inches.

LEUCOPTERA. Cinereous glossed with blue and green, beneath, rump, and wings waved with white. Gmel. *Hirondelle à ventre blanc de Cayenne*, Buff. *White-winged swallow*.

Length four inches and a half to five inches; the bill black; wings longer than the tail; quill and tail-feathers brown, glossed with blue and green; the legs pale. A variety of this species is also found, the plumage of which is brown above, beneath spotted with brown. These birds inhabit the marshes of Savannah.

PELASGIA. Tail-feathers equal, naked and subulate at the tip. Gmel. *Hirundo cauda aculeata americana*, Kalm. *Hirundo Carolinensis*, Briss. *American swallow*, Catesby. *Aculeated swallow*, Arct. Zool.

There are two distinct varieties of this species, in one of which the throat is whitish and spotted with rufous, in the other the rump is grey, and the throat grey tinged with rufous. The first inhabits Carolina and Virginia, the other Louisiana; the common occurs in Cayenne. The length is four inches and a quarter, and it builds in chimneys like the common swallow.

ACUTA. Black, beneath brown; tail-feathers naked, and subulate at the tip. Gmel. *Hirondelle noire acutipenne de la Martinique*, Buff. *Acute tailed swallow*.

A small bird not exceeding the size of the common wren. This species is found in Martinique.

PACIFICA. Brown-black; throat and rump blueish-white. L' *Hirondelle brune de la Nouvelle Hollande*, Sonn. *Pacific swallow*.

Native of the islands in the Pacific ocean.

CAUDACUTA. Blackish; front white; wing-coverts varied with white; caudal feathers pointed at the end. *Hirundo caudacuta*, Lath. L' *Hirondelle acutipenne de la Nouvelle Galle*, Viel. *Sharp-tailed New Holland swallow*

Inhabits New Holland. Size twice that of *Hirundo acuta*.

DAURICA. Blue, beneath white; temples and rump ferruginous. Gmel. *Hirundo alpestris*, Pallas. *Daurian swallow*.

Inhabits the Alpine parts of Siberia, and builds an hemispherical nest in the clefts of the highest rocks. Its size exceeds that of the common swallow; the temples are ferruginous; primary quill-feathers blackish, the tips obtuse with a brown streak; the first long; outer tail-feather twice the length of the rest; vent pale-ash, the feathers black at the tip.

ERYTHROCEPHALA. Dusky black, the feathers edged with white; beneath white; the head red. Gmel. *Red-headed swallow*, Lath.

Size of the least humming bird. Inhabits India.

AOONALASHKENSIS. Black; beneath cinereous; rump whitish. Lath. *Aoonalashka swallow*.

Inhabits Aoonalashka. Length four inches and a half.

INDICA. Fulvous, beneath whitish; greater part of the head rufous. Gmel. *Rufous-headed swallow*, Lath.

Native of India. The length is four inches; some of the wing-coverts edged with white; quill-feathers longer than the tail; bill dusky brown; legs dusky.

NIGRA. Entirely black. Gmel. *Hirundo apus dominicensis*, Briss. *Petit martinet noir*, Buff. *Black swallow*.

The length of this bird is near six inches; the bill black and half an inch long; the tail is forked; and the wings longer by nearly an inch and a half. This species inhabits dry places in the interior of South America, and is not numerous. For the reception of its nest it digs a deep hole in the earth, about half a foot in length, with a long entrance rising to the surface, the opening of which is so very small as only just to permit its entrance. Buffon describes two varieties of this bird, one of which has a white stripe in front, and the other entirely blackish grey.

DOMINICENSIS. Black, with a steel gloss; abdomen white. Gmel. *Grand martinet noir à ventre blanc*, Buff. *St. Domingo swallow*.

Size of the chimney swallow; the bill and legs brown. This species inhabits the West Indian islands during the months of May, June, and July. Its song resembles that of the lark.

PERUVIANA. Black, beneath white; band on the belly pale ash-colour; quill and tail-feathers pale grey, edged with yellowish-grey. Gmel. *Hirundo Peruviana major*, Briss. *Peruvian swallow*.

Native of Peru. The eyes black, surrounded by a brown circle.

CINEREA. Black, beneath cinereous; quill and tail-feathers cinereous, edged with yellowish-grey. Gmel. *Petit hirondelle noire à ventre cendré*, Buff. *Ash-bellied swallow*, Lath.

Less than the common swallow, and inhabits Peru and Otahcite. A supposed variety entirely blackish-grey, with the wings longer than the tail, is found in Louisiana.

CHALYBEA. Black with a steel gloss, beneath white; wings and tail black; bill and legs brown. Gmel. *Hirundo Cayanensis*, Briss. *Hirondelle de Cayenne*, Buff. *Chalybeate swallow*.

A constant inhabitant of Cayenne throughout the year, and is frequently seen perched on fallen or decayed trees, in the hollows of which it lays its eggs, without the trouble of composing a nest. The length of the bird is six inches; the bill three quarters of an inch long, rather stout, and with the legs brown.

VIOLACEA. Black-blue tinged with violet; greater quill-feathers within, the bill and legs blackish. Gmel. *Hirondelle bleue de la Louisiana*, Buff. *Violet swallow*.

Length eight inches and a half; bill three quarters of an inch and black; the legs black. Inhabits Louisiana.

JAVANICA. Blue-black; front, throat, and fore part of the neck, ferruginous; beneath and rump ash; tail black, the feathers, except the two middle ones, with a white spot each side. *Hirundo Javanica*, Sparman, &c. *Java swallow*.

About the size of the chimney swallow; the bill and legs black. Inhabits Java.

BICOLOR. Black glossed with blue; front, fore part of the neck, and flank, red-brown; throat fawn colour. L' *Hirondelle noire et fauve*, Sonnini.

Native of America; size of the chimney swallow, and rather longer; the wings and tail edged with greyish-white; the breast grey-brown; middle of the belly and the under
coverts

coverts of the tail whitish; tail forked; bill and legs black. The male birds vary in the colour of the plumage, beneath being more or less whitish, tawny or reddish. The colours of the female are more obscure.

CERULEA. Blue, glossed with violet, green, and coppery; front, cheeks, throat, and under parts of the neck, reddish; tail with a crescent-formed band of white. *L'Hirondelle bleue et rouge*, Sonnini.

A new species lately found in Guiana; the length six inches and a half; the bill half an inch; between the neck and breast a blue collar.

**** Toes all placed forwards.** Swift.

APUS. Blackish; chin white. *Hirundo apus*, Linn. *Martinet noir*, and *grand martinet*, Buff. *Mauerfchwalbe*, Frisch. *Black martin* or *swift*, Ray. Will. *Donov. Br. Birds.*

The male of this well known species is about eight inches long, the female rather less; the whole plumage of the former sooty black, except the chin, that of the female more inclining to brown, and the spot on the chin obscure. The swift, from its length of wing, flies well, but its feet are so small that it rises from the ground with great difficulty; its walking also is attended with inconvenience from the same cause, and it rests chiefly by clinging to the sides of walls, and other similar situations. It builds under the eaves of houses, or in steeples, towers, and other lofty buildings; and generally lays five eggs, the colour of which is white, and the form somewhat elongated. The food of these birds consists of insects. They are inhabitants chiefly of the European continent, though sometimes noticed in America. This is the only kind of swift found in Britain.

MELBA. Brown; chin and belly white. *Hirundo melba*, Gmel. *Hirundo major Hispanica*, Briss. *Hirundo riparia maxima*, Klein. *Hirundo Alpina*, Scop. *Grand martinet à ventre blanc*, Buff. *Greatest martin* or *swift*, Edw. *White bellied swift*.

Length eight inches and a half; the bill black; collar grey-brown varied with blackish; wings and tail glossed with red and green; breast white; lower part of the belly grey-brown; legs flesh-colour, and downy in front. Inhabits the mountainous parts of Spain, and other countries in the south of Europe. It flies higher than the common swift, and, like that species, feeds on insects.

CAYENNENSIS. Blackish-violet; head black; collar two-cleft, band of the eyes, and the thighs white. Gmel. *Martinet à collier blanc*, Buff. *White collared swift*.

Native of Cayenne, where it builds its nest in houses. The nest is large, long, and conic, the greatest breadth five inches, and the length nine inches; it is composed of down well woven together, and the cavity divided obliquely down the middle by a partition which extends over that part of the nest in which the eggs are disposed. The length of this bird is five inches and a quarter.

SINENSIS. Brown, beneath reddish grey; crown pale rufous; eye-brows brown; chin and eye-lids white. Gmel. *Grand martinet de la Chine*, Sonner. *Chinese swift*.

Inhabits China; length eleven inches and a half; bill, irides, and legs blue-grey.

HIRZHOLMEN, or **HERTZHOLM**, in *Geography*, three small islands of Denmark, lying in the Cattagat, chiefly inhabited by fishermen; 4 miles N.E. of Fladstrand. N. lat. $57^{\circ} 31'$. E. long. $10^{\circ} 24'$.

HISCAR CHADUMAN, or *Hifaree*, a town of Great Bucharia; 60 miles N.N.E. of Balk.

HISCHERE, two small islands among the Hebrides. N. lat. $57^{\circ} 37'$. W. long. $7^{\circ} 40'$.

HISHOLT, a town of Sweden, in the province of Smaland; 20 miles S.E. of Helmsfladt.

HISINGEN, a small island in the North sea, situated near the coast of Sweden, at the mouth of the Gotha, about 16 miles long and six broad, containing seven parishes. The town of Gotheborg was first built on this island. N. lat. $57^{\circ} 45'$. E. long. $11^{\circ} 48'$.

HISMO, a town of Albania, at the mouth of a river; 16 miles N.N.E. of Durazzo.

HISPA, in *Entomology*, a genus of Coleoptera in the Linnæan system, having the antennæ cylindrical, approximate at the base, and seated between the eyes; feelers fusiform; thorax and wing-cases often spinous, and usually toothed at the apex.

The four species of the hispa tribe, known to Linnæus, were *atra*, *tellacea*, *sanguinicollis*, and *mutica*, the last of which was not however then considered as appertaining to that genus, being referred by Linnæus to the dermestes family, under the specific name of *clavicornis*. Geoffroy describes the species *atra* as a native of France, and this he places with his *crioceræ*, the genus formed by that writer of the oblong chrysomele; but from which, on close inspection, the true hispæ will be found to differ rather considerably in the structure of the antennæ, and some other less essential particulars. No material progress was made in the knowledge of the species composing the hispa genus till the time of Fabricius, that writer having described and brought together in one view, from the cabinets of Rohr, Bosc, Paykull, and Hunter, no less than 12 species, including the four already mentioned. In the first instance Fabricius included more, several new kinds being united by him with the true hispæ, which, on mature deliberation, he conceived it proper to separate, and divide into two new genera; and thus it happens, that the *Ptilinus* and *Melasis* of his last works are hispæ of the former. This observation will serve to explain, in an obvious manner, the cause of that discordance which prevails between the works last noticed, and the Gmelinian edition of the *Systema Naturæ*; the latter containing, under the genus hispa, a further number of Fabrician species, than the "*Entomologiæ Systematicæ*" of that author, or any of his later works, in which *Ptilinus* and *Melasis* are considered separately. Thunberg has added some new species to the hispæ tribe, and these augmentations have increased the number to nearly twenty species.

The genuine hispæ, according to Fabricius, have cylindrical antennæ; feelers equal, filiform, and thicker in the middle; jaws bifid, and lip horny and entire. *Ptilinus* has the antennæ flabelliform; feelers four, and somewhat equal; jaws short and bifid; and the lip membranaceous and sub-emarginate. In *Melasis* the antennæ are flabelliform, as in *Ptilinus*, but the feelers (four in number) are clavated, with the extreme joint ovate, and the lip membranaceous and entire.

Most of the hispa genus are natives of extra European climates; those found in Europe occur in the winged state on the leaves and roots of different kinds of grass; their larvæ and transformations are unknown.

Species.

ATRA. Antennæ fusiform; thorax and wing-cases spinous. Linn. *Crioceris tota atra*, Geoff.

Found at the roots of grass in Europe.

TESTACEA. Antennæ fusiform; body testaceous; antennæ and eyes black. Linn.

An African species; spines on the thorax lateral, on the wing-cases scattered, the whole black.

BIFUSTULATA. Antennæ ferrated; body hairy, and black; wing-cafes with a rufous spot at the bafe. Fabr.

Native of Italy.

MUTICA. Antennæ hairy; body black; wing-cafes striated. Linn.

Inhabits Europe.

SANGUINICOLLIS. Antennæ fusiform; thorax and bafe of the wing-cafes fanguineous; wing-cafes ferrated. Linn.

An American fpecies; wing-cafes ferrated at the tip with three elevated ftriæ, and the intermediate fpaces punctured.

SERRATA. Antennæ fusiform; body black; wing-cafes pale rufous, ferrated and black at the tip. Fabr.

Native of Surinam; thorax black with rufous fides; wing-cafes ftriated.

DENTATA. Antennæ fusiform; body black; margin of the thorax yellow; wing-cafes ferrated, with a yellow spot at the bafe, and a band in the middle. Fabr.

Head, with the antennæ black; thorax black except the fides; breaft and bafe of the abdomen yellow. Inhabits Cayenne.

ANGULATA. Antennæ fusiform; body yellow; head, dorsal line on the thorax, and finuate margin of the wing-cafes black. Fabr.

Native of Cayenne. Head and antennæ black; wing-cafes grooved, truncated, and toothed at the tip; body beneath ferruginous.

EMARGINATA. Antennæ fusiform; body black; wing-cafes with a rufous spot at the bafe, the tip bidentated. Fabr.

Size of the preceding; head rufous; eyes globular, and with the antennæ black; wing-cafes with three raifed lines, tranfverfely grooved; body beneath palifh; legs black; thighs pale at the bafe. Inhabits Surinam.

SERRATICORNIS. Antennæ ferrated, and compressed at the bafe; body black; margin of the thorax, and spot at the bafe of the wing-cafes yellow. Fabr.

Inhabits Surinam, and refembles the laft. The head is whitifh; crown black; wing-cafes grooved, with a fingle raifed line in the middle, and three-toothed at the tip, the middle tooth larger, rounded, and ferrated; breaft and bafe of the thighs white.

BIDENS. Ferruginous; thorax with a black lateral line; tip of each wing-cafe armed with a fingle tooth. Fabr.

Size of the laft; head ferruginous; eyes black; wing-cafes grooved with a double row of dots between each furrow. Native of Surinam.

NIGRICORNIS. Glabrous and fcarlet; antennæ black. Fabr.

Native of the Cape of Good Hope.

BIHAMATA. Unarmed, black, fotted with red; wing-cafes truncated and hooked. Gmel.

Oblong, depressed, and inhabits India.

CORNUTA. Entirely black; anterior and posterior part of the thorax spinous; wing-cafes with longitudinal raifed lines. Thunb.

Inhabits Sweden.

CAPENSIS. Pitych and hispid; thorax with a palmated spine. Thunb.

Found at the Cape of Good Hope.

SCABRA. Entirely black; thorax and wing-cafes with a ferrated fringe at the edge. Thunb.

Inhabits Sweden.

SERRATULA. Brown; antennæ ferrated; wing-cafes ftriated. Thunb.

Inhabits Upfal.

HISPALIS, SEVILLE, in *Ancient Geography*, a town of Hispafia, on the Bætis, which was one of the moft confider-

able towns in Bætica. This city was ancient even in the time of Strabo, Pomponius Mela, Pliny, and Ptolemy, all of whom have mentioned it. Its foundation has been attributed to Hercules, to Bacchus, to the Hebrews, the Chaldeans, and the Phœnicians. When it became a Roman colony, it was much frequented on account of its commerce. It had the furname of Romulensis and the title of Conventus. The changing of the name Hispalis, which fome afcribe to a prince of that name, but which is more probably derived from Spila, or Spala, a Phœnician word fignifying a plain; or verdant country, into that of Colonia Romula, which it bears on its medals, is afcribed to Julius Cæfar by Ifidore. Julius Cæfar, according to him, founded Hispalis; and from his name, joined to that of Rome, it was denominated Julia Romula. Many of the medals of this town exhibit traces of the basest adulation with regard to Auguftus; as his head is adorned with the attributes of the fovereign of univerfal nature. Thofe of Julius are of a fimilar kind. On fome Tiberius appears on one fide, and on the other Germanicus and Drufus, whom he had adopted. See SEVILLE.

HISPANIA, in *Ancient Geography*, an extenfive country, forming a kind of peninfula in the S.W. of Europe, and comprehending Hispafia Tarragomenfis, Lulitania, and Bætica. It lay between 36° and 43° 46' 37" N. lat., and between 8° and 21° E. long. from Ferro. It was bounded on the N. by the bay of Bifcay and the Pyrenean mountains; on the E. and S. by the Mediterranean fea; and on the W. by the Atlantic ocean. The greateft breadth of this peninfula, from N. to S., is 550 miles, and its length 660 on the parallel of 42° N. lat. Spain, or a confiderable part of it, was anciently called *Iberia*, (which fee,) and *Celiberia*, (which fee,) from the Celtæ and Iberi, two tribes of barbarians fettled on the banks of the Ebro (fee *CELTIBERIANS*); Hesperia, from its fituation, being the welfern province of the Roman empire, of Europe, and of the Continent; and alfo Hispafia, probably from the oriental *ἵψυ*, "Span," or "Sphan," concerning the meaning of which there is fome difference of opinion. Bochart fays that Span fignifies a rabbit, and that this name was given to the country becaufe it was found to abound with thefe animals. Others, however, allege, that the proper fignification of the oriental Span is fomething concealed, or far from view; and fuch, it is alleged, was the fituation of Hispafia with regard to the Phœnicians. Moreover, as the northern region was remote and concealed with regard to the fouth, Span was ufed to denote the north. This appellation, it is faid, was given to it by the Phœnicians, as a remote or concealed country with refpect to the farther extremity of the Mediterranean; and as they approached it along the coast of Africa and towards the ftrait, they alfo might juftly call it, with regard to themfelves, the northern country. Before the Carthaginians made any conquifts in Spain, the country muft have been divided into various petty independent kingdoms; and during this early period, the Phœnicians, who were probably the firft people who came hither by fea, planted feveral colonies along the fouthern coasts, in Turdiantia, a diftrict of Bætica; and afterwards fome Grecian adventurers from Marfeilles crossed the gulf of Lyons, and fettled near the N.E. extremity of the country. After the Carthaginians had fubjected it to their dominion, it was partitioned into provinces, the number of which cannot now be afcertained. However, they eftablifhed colonies on the fouth coast, E. of the ftrait of Gibraltar. The firft divifion which the Romans made of that part which they reduced, was into Hispafia Citerior and Hispafia Ulterior, which were governed fometimes by prætors, and fometimes by præconfuls. This divifion took place, as Livy informs us, immediately after

HISPANIA.

after the conclusion of the second Punic war. In the beginning of the Macedonian war, the two provinces were united; but they were again separated in the consulate of Q. Ælius Pætus and M. Junius Pennus. This last distribution of Spain continued till the reign of Augustus, who divided Hispania Ulterior into the two provinces of Bœtica and Lusitania, and affixed the name of Provincia Tarraconensis to Hispania Citerior. This latter province, so called from its principal city, comprehended nearly three-fourths of modern Spain, and was separated from Bœtica and Lusitania by an imaginary line supposed to extend from the gulf of Carthægena to the conflux of the Agueda and Douro, on the confines of Portugal. Bœtica, so called from the river Bœtis, was a small province along the coast, on either side of Fretum Herculeum, from the gulf of Carthægena to the mouth of the Anas; and, in general, included the provinces now called Granada and Andalusia. The division, introduced by Augustus, remained as long as the Romans had any power in Spain. (See BÆTICA, LUSITANIA, and TARRACONENSIS.) The most noted rivers in Hispania were the Minius or Minho, Lethe or Lima, Durius or Douro, Tagus or Tajo, Anas or Guadiana, Bœtis or Tartessus or Guadalquivir, Singulis or Xenil, Terebus or Tader or Segura, Suco or Xucar, Iberus or Ebro, Sicoris or Segre, Rubricatus or Lobregat, Sambroca or Ter; and its principal bays were the Sucronensis sinus or bay of Valencia, Illicitanus sinus or bay of Alicante, Virgitanus sinus or gulf of Carthægena, Gáditanus sinus or bay of Gibraltar, Magnus Portus or bay of Corunna, commonly called the Groine, and Cantabricus sinus or bay of Biscay. Its chief mountains, capes and promontories, as well as towns; will appear under their proper heads, and under the title SPAIN.

As to the history of Hispania, it is hardly necessary to observe, that the Spaniards trace their origin from Tubal, the fifth son of Japhet, who is said to have reigned in Spain from the year of the flood 143 to 258; and that from him they pretend to give a series of monarchs down to three Gerions, who were killed by the Egyptian Hercules, and of some other invaders from Libya, as far as the time in which they allow the Celtes to have made their first entrance into Spain, in the year of the flood 1350. According to this fabulous account, Spain had been a monarchy, and had lasted 1226 years before the arrival of the Celtes. But dismissing these fables, we shall begin the history of Spain with the arrival of the Celtes in this country, which is said to have taken place in the year 1649 B.C. These people crossed the Pyrenees, and after a contest with the Iberians, as the native Spaniards were called, formed an alliance with them, and by intermarriage they became one people, under the name of Celtiberians. After an interval of about 20 years, the Rhodians came hither by sea, and settling at the foot of the Pyrenean mountains, built a city, to which they gave their name; but which has long since been reduced to ruins. At this time the mines of Spain yielded great quantities of silver; accordingly Aristotle informs us, that the Phœnicians visited this country in the 9th century B.C. to exchange their naval commodities for this metal; and they are supposed to have settled in Bœtica and to have built several cities. Eusebius, in his Chronicon, sub Ann ante Chr. 840, mentions several nations, besides Tyrians, Egyptians, and Phœnicians, who made settlements in Spain; such were the Milefians, Caritii or Carians, Lesbians, and Phœnicians. Nebuchadnezzar also, after the destruction of Jerusalem and conquest of Judea, is said, by Josephus and Strabo, to have reigned in Spain nine years; at the end of which period, it is affirmed, that he abandoned it to the Carthaginians. (See CARTHAGINIANS.) It is probable,

however, that most, if not all, of these nations, contented themselves with maritime situations, for the advantage of commerce and the command of the sea; and that they penetrated but a little way into the country; while the natives might enjoy their own laws and government, and be glad to trade and barter with them; and feel little solicitude who were masters of the sea-coasts and parts adjacent, provided they could obtain the benefits of commerce with them, and enjoy the produce of their own lands, in peace and tranquillity. The Carthaginians, after many severe contests with the Romans, were dispossessed by the Scipios, and as soon as they became masters of this rich and productive country, or at least of a considerable part of it, they directed their chief attention to its valuable mines, particularly those of silver and gold; and it is said, that Scipio, upon his return to Rome, carried with him 14,342 pounds of silver, besides an immense quantity of coin, cloaths, corn, arms, and other valuable effects. L. Lentulus is said to have brought away 44,000 pounds of silver, and 2550 pounds of gold, besides the money which he distributed among his military followers. L. Manlius carried with him 1200 pounds of silver, and about 30 of gold. Corn. Lentulus, after having governed the Hither Spain two years, possessed himself of 1515 pounds of gold, and of silver 2000, besides 34,550 denarii in coin, whilst his colleague brought from Further Spain 50,000 pounds of silver. It was this prodigious wealth, supplied by the country, which was still thought to be unexhausted, that invited the northern nations many centuries after, to make incursions, and to drive the Romans out of it. (See GOTHS and VANDALS.) Learning, and the liberal arts, if Strabo (lib. iii.) may be credited, began to flourish at an early period in this country; for he tells us, that the Turdetani, a people of Bœtica, were very celebrated in this respect, and were possessed of a vast number of volumes of great antiquity, and codes of laws written in verse, and other pieces of poetry of very ancient date. Their language was most probably the old Celtic; but it underwent many changes by means of the different nations who subdued this country, and particularly by the influence of the Romans. Upon the irruption of the Goths and Vandals, it degenerated from its purity. It is evident, if we may depend upon the authority of Strabo, that the ancient Spaniards must have admitted writing many ages before the Gauls, Germans, or any others of Celtic extraction. From the settlement of the Romans, however, their letters, as well as language, extirpated all the rest, and continued in use till their expulsion, when the old Gothic took place. In the educating of their youth, they took great pains to inspire them with a love of liberty, and a contempt of death. This country, by reason of its excellent situation for commerce, and the abundance of commodities, particularly silver, which it furnished, invited thither all the trading nations of Europe, Asia, and Africa; nor is there, perhaps, any kingdom, that ever passed under so many different masters. Egyptians, Phœnicians, Tyrians, Carthaginians, Romans, Gauls, Germans, Goths, Vandals, Moors, and many others had their settlements in it, and thus promoted its trade and navigation, and founded in it great and opulent cities. With regard to the character of the ancient Spaniards, we may observe, that they possessed all the virtues of the old Celtic nation; and inherited fewer of their vices than any others of their descendants; they were brave, magnanimous, and hospitable to a high degree; and so famed for their fidelity, that even after being conquered by the Romans, several of these emperors preferred them to other nations, to be their body-guard. They were sober, frugal, and patient under hardships; jealous of their honour, and

till a few centuries past, rather desirous to preserve their own territories, than to seek new settlements abroad. See SPAIN.

HISPANICUM VIRIDE, *Spanish green*, a name given by some to verdigris.

HISPANIOLA, in *Geography*. See *St. DOMINGO*.

HISPID LEAF, among *Botanists*. See *LEAF*.

HISPID Stalk. See *STALK*.

HISSAR, in *Geography*, a circar of Hindoostan, in the Soubah of Delhi, bounded on the N. by Sirhind, on the E. by Ballogistan, on the S. by Nardeck, and on the W. by Moultan.

HISSAR Ferozeh, the capital of the above circar, near the river Surfooty, which traverses the circar from N. to S.; 75 miles W. of Delhi. N. lat. $28^{\circ}40'$. E. long. $76^{\circ}4'$.

HISSING, an appellation given by grammarians to the three consonants, *s*, *x*, and *z*.

HISTER, an Etrurian word which implied a stage-player, and during the pestilence at Rome, 364 years B. C. actors were sent for from Etruria, to try to appease the gods by public exhibitions; hence the Roman actors afterwards acquired the name of histriones. Livy, lib. vii. cap. 2.

HISTER, in *Entomology*, a genus of Coleoptera, the antennæ of which are clavated, and the club solid, with the last joint compressed and decurved; head retractile within the body; mouth forcipated; wing-cafes shorter than the body, and truncated; anterior shanks toothed; hind shanks spinous. In the larvæ, as well as the adult, or winged state, the insects of this family are frequently met with in the dung of horses, cows, and other animals.

Species.

MAJOR. Black; wing-cafes somewhat striated; thorax ciliated at the edges. Linn.

Native of Africa, and differs only in size from the Linnæan hister maximus. The hairs at the edges of the thorax ferruginous.

UNICOLOR. Black; wing-cafes obliquely striated. Linn. *Donov. Br. Inf.*

Inhabits Europe and America.

GLABRATUS. Black and polished; wing-cafes somewhat striated, punctured, and as long as the abdomen. Fabr.

Jaws advanced, arched, acute and armed with a tooth in the middle; antennæ black; wing-cafes retuse behind.

SEMPUNCTATUS. Black, polished, brassy; wing-cafes obliquely striated at the base, and obsoletely punctured at the tip. *Herbst.*

Native of Barbary; head and thorax with a brassy hue; all the shanks compressed and ferrated. Found also by Paykull in Sweden; and by Marsham in Britain.

SCABER. Black, and scabrous, with raised dots. Fabr. Inhabits Spain.

CYANEUS. Thorax brassy; wing-cafes blueish. Oliv.

A New Holland species; the head dusky; thorax somewhat punctured at the margin; wing-cafes polished, abbreviated, and obliquely striated at the base; legs black.

PLANUS. Plane opaque and black; wing-cafes very smooth. *Fuessly, &c.*

Native of the south of Europe.

BRUNNEUS. Ferruginous; wing-cafes sub-striated. Oliv.

Inhabits Sweden; and also Britain (*Donov. Br. Inf.*)

PYGMÆUS. Deep black; wing-cafes very smooth. Linn.

Inhabits Europe.

DEPRESSUS. Depressed, black, and polished; wing-cafes somewhat striated. Oliv. *Hister compressus*, *Herbst.*

Found under the bark of birch-trees in Germany (*Panz.*), and in Britain (*Donov. Br. Inf.*).

4-DENTATUS. Depressed, black, and polished; wing-cafes with a single stripe; jaws exerted, and longer than the head. Oliv.

Native of North America.

SULCATUS. Black; thorax with five raised lines, wing-cafes three; the interstices punctured. Oliv.

Inhabits Europe. Small; the head rather prominent each side above the eyes; anterior legs toothed.

DUODECIM STRIATUS. Black, polished; wing-cafes with twelve striæ. *Marsh, &c.*

Found in France (*Vill.*), in Sweden (*Paykull*), and in England (*Donov. Br. Inf.*).

VIOLACEUS. Violaceous; thorax entirely dotted; wing-cafes with five recurved striæ at the base, tip dotted. *Marsh.*

Inhabits Britain. Length two lines and three quarters.

VIRESCENS. Green; thorax entirely dotted; wing-cafes with four recurved striæ, the tip dotted. *Marsh.*

Perhaps a small variety of hister violaceus; the length one line and a half.

PICEUS. Entirely pitchy; wing-cafes length of the abdomen, with four striæ. *Marsh.*

Native of Britain; length one line.

OBLONGUS. Depressed, black, and polished; wing-cafes striated; body oblong. Fabr.

Inhabits Sweden, under the bark of the roots of the ash. *Afzelius*. Differs from *H. fulcatus* in the more oblong form of the body.

ABBREVIATUS. Black; wing-cafes with crenated striæ, the inner ones abbreviated.

Native of America. Size of *H. pygmæus*.

SINUATUS. Black, with a sinuate rufous spot in the middle of the wing-cafes. Fabr. *Hister reniformis*, Oliv.

Wing-cafes striated at the inner edge, and smooth at the future. Inhabits Germany.

CRUCIATUS. Black; wing-cafes testaceous, with a common black cross. Fabr.

Native of Barbary. Wing-cafes smooth and polished, the future and spot crossing it in the middle black; hind margin black. Fabr.

2-MACULATUS. Black; wing-cafes striated with a red spot behind. *Donov. Br. Inf.*

Inhabits Europe.

4-MACULATUS. Black; wing-cafes with two red spots on each. Oliv.

Native of Germany (*Panz.*), also found in Britain (*Donov. Br. Inf.*)

ÆNEUS. Brassy; wing-cafes striated at the base, and punctured at the tip. Fabr. *Attelabus cupreus*, *Fourcr.*

Inhabits Sweden (*Paykull*), and Britain (*Donov. Br. Inf.*)

DETRITUS. Black, polished; wing-cafes pitchy, with dusky tip. Oliv.

Wing-cafes with four oblique striæ at the base, the tip punctured. A New Holland species.

PICIPES. Oblong and black; wing-cafes very short; antennæ and legs pitchy. Oliv.

Inhabits Germany. Wing-cafes abbreviated and not striated.

CÆSUS. Black; thorax with a transverse groove; antennæ ferruginous. *Herbst.*

Native of Germany.

PARVUS. Uniform black; wing-cafes with fix striæ; two inner striæ abbreviated. Marsh.

A new species found in Britain.

INEQUALIS. Black, polished; wing-cafes striated exteriorly, towards the future smooth; jaws longer than the head. Fabr. Suppl. *Hifter levis*, Rossi.

Inhabits Germany, and also England. Donov. Br. Inf.

QUADRIGUTTATUS. Black, polished, and very smooth, wing-cafes dotted, with two pale yellowish spots on each. Fabr.

Lately discovered in Pembrokefhire. Donov. Tour Wales. Spots on the wing-cafes whitish or reddish.

BIPUSTULATUS. Black, with a red spot in the middle of each wing-cafe; anterior shanks tridentated. Schrank, &c. *Hifter purpurascens*, Paykull.

Length two lines and a half; the species inhabits Sweden (Paykull), Germany (Panz), and Bohemia (Preys).

Obf. This insect mult not be confounded with the hifter bipustulatus of the Fabrician Suppl. a species twice the size of bimaculatus, and which inhabits India. The colour of this last-mentioned kind is deep black; wing-cafes striated, with a red dot in the middle, and the head retuse.

IMPRESSUS. Deep black and polished; wing-cafes striated; head with two impressed dots.

Size of hifter unicolor, but distinct in having the two impressed dots in front of the head; all the shanks ferrated. Inhabits Kiel.

PULCHELLUS. Brassy-green; wing-cafes striated, with a rufous dot behind; vent coppery. Fabr. Suppl.

Small, and inhabits Tranquebar; head and thorax brassy-green, polished and immaculate; vent prominent.

ERYTHROPTERUS. Deep black and polished; wing-cafes striated, with the tip rufous. Oliv.

Native of Tranquebar. Allied to hifter bipustulatus.

PERPUSILLUS. Rufous brown, and dotted. Marsh.

Length one-third of a line, and inhabits Britain. The form convex, dots not conspicuous without a lens.

MINIMUS. Black, very glabrous and polished. Marsh.

Scarcely so large as the last; country the same.

HISTIAEA, in *Ancient Geography*, *Orio*, a maritime town of the island of Eubœa, under mount Telethrius, near the mouth of the river Callas. It was situated on a rock, and therefore called Oreum.

HISTIAEOTIS, a country of Thessaly, situated under mount Ossa and mount Olympus, the latter lying to the N. and the former to the S. This country was also called the "Doride," from Dorus, the son of Deucalion, under whose reign it was inhabited by a Pelasgic nation, which was driven from it by the Cadmæans. But, in process of time, the Perrhæbi, having destroyed the town of Histiaea in the isle of Eubœa, caused its inhabitants to remove to the continent, who gave to the territory which they occupied, the name of Histiotide, according to Strabo, but according to Herodotus, Histiotide.—Also, a small country in the island of Eubœa, of which Histiaea was the capital, and which extended to Artemesium, towards the Cænæum promontorium, at a little distance from Thermopyla.

HISTIODROMIA, the art of sailing, or of conducting vessels on the sea.

The word is compounded of $\iota\sigma\tau\omicron\iota$, *sail*, of $\iota\sigma\tau\omicron\varsigma$, the *mast of a ship*, which comes from $\iota\sigma\tau\mu\iota$, *sto*, *I stand*, and $\delta\rho\omicron\mu\omicron\varsigma$, *course*, of $\delta\rho\iota\mu\omicron\varsigma$, *I run*.

Histiiodromia is the same with what we otherwise call *navigation*.

Histiiodromia turns on four points, any two whereof be-

ing given, the other two are easily found from them, by the loxodromic tables, sines, tangents, secants, Mercator's charts, &c. These four things are, the difference of latitude, difference of longitude, the course, and the distance run.

HISTORICAL, something that relates to history.

HISTORICAL Column. See COLUMN, *historical*.

HISTORICAL Music, musica historica, is that branch of music which treats of the origin and invention of music, of modes, of notes, instruments, &c. as also the lives and writing of celebrated authors on that subject.

HISTORICAL Painting. The derivation of the word historical, at once points out the proper application of it as descriptive of one particular application of the art of painting, (*i. e.*) the representation of events which have occurred, and which are fit subjects for the pen of the historian; but common custom applies it in a more extended, though very improper, sense, as descriptive, not only of what is strictly historic, but what is also of the *poetic* or dramatic nature: and divides the last into four branches only, which are Historical, Portraiture, Landscape, and Still-life. See PAINTING.

HISTORICAL Style. See STYLE.

HISTORIOGRAPHER, composed of $\iota\sigma\tau\omicron\iota\sigma\tau\omicron\varsigma$, *history*; and $\gamma\rho\alpha\tau\omicron\upsilon\varsigma$, *I write*, a professed historian, or writer of history; or a person who applies himself peculiarly to it.

The province of the historian is important and extensive; and he, therefore, ought to be endowed with great and uncommon qualifications. As it is the office of the historian to record truth for the instruction of mankind, impartiality, fidelity, gravity, dignity, and accuracy are indispensable and essential qualities belonging to a person who undertakes this office. He must neither be a panegyrist nor a satyrast. He must not enter into faction, nor give scope to affection: but contemplating past events and characters with a cool and dispassionate eye, must present to his readers a faithful copy of human nature. Cicero has given us the whole art of composing history in a very compendious and comprehensive manner. No one is ignorant, says he, that the first law in writing history is; not to dare to say any thing that is false, and the next, not to be afraid to speak the truth; that on the one hand there be no suspicion of affection, nor of prejudice on the other. These fundamental principles are generally known: but the superstructure consists partly in things and partly in the style or language. The former require an order of time, and description of places. And because in great and memorable events, we are desirous to know first their causes, then the actions themselves, and lastly their consequences; the historian should take notice of the springs or motives that occasioned them; and in mentioning the facts themselves should not only relate what was done or said, but likewise in what manner; and in treating of their consequences, shew whether they were the effects of chance, wisdom, or prudence. Nor should he only recite the actions of great and eminent persons, but likewise describe their characters. The style ought to be fluent, smooth, and even, free from that harshness and poignancy which are usual at the bar. De Orat. lib. ii. cap. 15.

According to this plan, in the observance of which few are superior to Tacitus, an historian should be not only a man of probity, but free from all passion and bias: he ought to unite the steadiness of a philosopher with the vivacity of a poet or orator. He should also possess a good judgment; to direct him what is proper to be said, and what to be omitted, and to treat every thing in a manner suited to its importance. This faculty will enable him to select such facts as are of the greatest moment; to represent them in connection

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connexion with their causes, to trace them to their consequences and effects, and to unfold them in clear and distinct order. Wisdom is the great end of history. It is designed to supply the want of experience; and though it does not enforce its instructions with the same authority, yet it furnishes a greater variety of instructions than it is possible for experience to afford in the longest life. Its object is to enlarge our views of the human character, and to give full exercise to our judgment on human affairs. It must not, therefore, be a tale calculated merely to please, and addressed to the fancy. Gravity and dignity are essential characteristics of history; no light ornaments are to be employed, no slippery of style, no quaintness of wit. But the writer must sustain the character of a wise man, writing for the instruction of posterity; one who has studied to inform himself well, who has pondered his subject with care, and addresses himself to our judgment rather than to our imagination. At the same time, historical writing is by no means inconsistent with ornamented and spirited narration. It admits of much high ornament and elegance; but the ornaments must be always consistent with dignity; they should not appear to be sought after; but to rise naturally from a mind animated by the events which it records.

Industry is likewise an essential quality of an accurate historian. Thucydides in his History of the Peloponnesian War, and Polybius in his History of the Roman Affairs, took great pains in procuring necessary information. An historian should be always actuated by a love of truth; to this purpose Polybius observes, that a good man ought to love his friends and his country, and manifest a similar disposition with their's, towards both their friends and enemies. But when he takes upon him the character of an historian, they must all be forgot. In history, all personal considerations should be laid aside, and regard be paid only to their actions. Lib. i. p. 13. See also Lucian, De Hist. Scrib. p. 366.

Suetonius, Thucydides, and Polybius are much commended for the integrity and ingenuity of their temper. Cicero observes, (*ubi supra*;) that history is conversant in great and memorable actions; and therefore a historian should always keep posterity in view, and relate nothing which may not on some account or other be worth the notice of future ages. Those who descend to trivial and minute matters, which are below the dignity of history, should be deemed journalists rather than historians. Whenever a prudent historian thinks it necessary or convenient to take notice of things that are in themselves less considerable, he either does it with brevity, or for some apparent reason, or accounts for it by some just apology. As it is the province of a historian to acquaint us with facts, he should give a narration or description not only of the facts, or actions themselves, but likewise of such things as are necessarily connected with them, *viz.* the characters of persons, the circumstances of time and place, in reference to which chronology and geography have been called the two eyes of history; the views and design of the principal actors, and the issue and event of the actions which he describes. The proper disposition of these various particulars depends on the skill and prudence of the writer.

The drawing of characters, says Blair, is one of the most splendid, and at the same time, one of the most difficult ornaments of historical composition. For characters are generally considered as professed exhibitions of fine writing; and an historian, who seeks to shine in them, is frequently in danger of carrying refinement to excess, from a desire of

appearing very profound and penetrating. He brings together so many contrasts, and subtle oppositions of qualities, that we are rather dazzled with sparkling expressions, than entertained with any clear conception of a human character. A writer who would characterise in an instructive and masterly manner, should be simple in his style, and should avoid all quaintness and affectation: at the same time not contenting himself with giving general outlines only, but descending into those peculiarities which mark a character in its most strong and distinctive features. The Greek historians sometimes give elogiums, but rarely draw full and professed characters. The two ancient authors, who have laboured this part of historical composition most, are Sallust and Tacitus. In tracing actions and events which the historian records to their springs, and also to their effects and consequences, two qualifications are necessary in order to his doing this with success: *viz.* a thorough acquaintance with human nature, and political knowledge, or acquaintance with government. The former is necessary to account for the conduct of individuals, and to give just views of their character: the latter to account for the revolutions of government, and the operations of political causes in public affairs. Both must concur in order to form a completely instructive historian. With regard to the latter, the materials and means of information, possessed by the ancient historians, were more circumscribed and limited than those of the moderns: far less communication and intercourse subsisted between neighbouring states, by the intervention of established ports, or of ambassadors resident at distant courts. Besides, they wrote for their own countrymen only; they had no idea of writing for the instruction of foreigners, whom they despised, or of the world in general; and hence they are less attentive to convey all that knowledge with regard to domestic policy, which we, in distant times, would desire to have learned from them. Perhaps also, though in ancient ages men were more abundantly animated with the love of liberty, yet the full extent of the influence of government, and of political causes, was not then so thoroughly scrutinized, as it has been in modern times; when a longer experience of all the different modes of government has rendered men more enlightened and intelligent, with respect to public affairs. To the reasons now stated it is owing, that though the ancient historians set before us the particular facts which they relate, in a very beautiful and distinct manner, yet sometimes they do not give us a clear view of all the political causes which affected the situation of affairs, of which they treat. From the Greek historians, we are able to form but an imperfect notion of the strength, the wealth, and the revenues of the different Grecian states; of the causes of several of those revolutions that happened in their government; or of their separate connections and interfering interests. In writing the history of the Romans, Livy had surely the most ample field for displaying political knowledge, concerning the rise of their greatness, and the advantages or defects of their government. Yet the instruction, in these important articles, which he affords, is not considerable. He is indeed an elegant writer, and a beautiful relater of facts; but by no means distinguished for profoundness or penetration. Sallust, when writing the history of a conspiracy against the government, which ought to have been altogether a political history, has evidently attended more to the elegance of narration, and the painting of characters, than to the unfolding secret causes and springs. Instead of that complete information, which we might naturally have expected from him of the state of parties at Rome, and of that particular conjuncture

conjuncture of affairs, which enabled so desperate a profligate as Cataline to become so formidable to the government, he has given us little more than a general declamatory account of the luxury and corruption of manners in that age, compared with the simplicity of former times. It is not meant, however, to censure all the ancient historians as defective in political information. No historians can be more instructive than Thucydides, Polybius, and Tacitus.

Thucydides is grave, intelligent, and judicious; always attentive to give very exact information concerning every operation which he relates; and to show the advantages and disadvantages of every plan that was proposed, and every measure that was pursued. Polybius excels in comprehensive political views, in penetration into great systems, and in his profound and distinct knowledge of all military affairs. Tacitus is eminent for his knowledge of the human heart; is sentimental and refined in a high degree; conveys much instruction with respect to political matters, but more with respect to human nature.

The historian should also introduce pertinent and useful reflections in the course of his narrations. The best historians, such as Sallust and Livy, &c. have allowed themselves this liberty. But the remarks or reflections of the historian should be brief, and differ in this respect from the encomiums or declamations of the orator. When observations are to be made concerning human nature in general, or the peculiarities of certain characters, if the historian can artfully incorporate such observations with his narrative, they will have a better effect than when they are delivered as formal detached reflections. To this purpose we may observe, that, in the life of Agricola, Tacitus, speaking of Domitian's treatment of Agricola, makes this reflection: "Proprium humani ingenii est, odisse quem læferis;" *i. e.* "It belongs to human nature, to hate the man whom you have injured." This observation is just and philosophical; but the form, in which it stands, is abstract and philosophical. A thought of the same kind has a fine effect elsewhere in the same historian, when speaking of the jealousies which Germanicus knew to be entertained against him by Livia and Tiberius: "Anxius," says he, "occultis in se patrum avæque odiis, quorum causæ acriores quia iniquæ:" *i. e.* "Uneasy in his mind, on account of the concealed hatred entertained against him by his uncle and grandmother, which was the more bitter, because the cause of it was unjust." This profound moral observation is introduced, without the appearance of making it in form, as a part of the narration, in assigning a reason for the anxiety of Germanicus. Tacitus excels in a talent of intermixing after this manner with the course of his narrative many striking sentiments and useful observations. For a more particular account of the distinguishing properties of historical narration; see NARRATION.

Historians have enlivened their narration, by introducing, on various occasions, speeches, which are either oblique or direct; the former recited by the historian in his own person. Of this kind is that of Hannibal in Justin, by which he endeavours to persuade king Antiochus to carry the heat of war against the Romans into Italy. (Lib. xxxi. cap. 5.) And in the latter, the person himself is introduced as addressing his audience; and therefore the words, as well as the sense, are to be accommodated to his character. Such is the speech of Eumenes, one of Alexander's captains and successors, addressed to his soldiers, when they had traiterously bound him in chains, in order to deliver him up to his enemy Antigonus. Justin, lib. xiv. cap. 4.

With regard to direct speeches, there are few ancient historians who have not adopted them, though some of our critics will only admit those which were really spoken by

the persons to whom they are ascribed. The first historian who introduced complete and finished speeches into history, is said to be Thucydides, those of Herodotus being but short and imperfect. (See ORATION.) Letters are sometimes met with in histories, as well as speeches: such are those of Alexander to Darius in Q. Curtius, lib. iv. cap. 1. and those of Tiberius and Drusus in Tacitus, Ann. lib. i. 73. iii. 53. 59. Digressions also, when they are neither too long nor too frequent, may be so managed by the historian, as to afford the reader both delight and profit. (See DIGRESSION.) With regard to the order of history, the historian should so form his introduction, as to give some general view of the subject, to engage the reader's attention, and to possess him with a candid opinion of himself and of his performance; this should be natural, and proportioned to the extent of the work. Such are those of Livy, Herodotus, Thucydides, Tacitus, and others. But order is to be principally regarded in the body of the work: for this purpose the historiographer should either attend to the time in a chronological series, which is best in biography, after the manner of Plutarch and Cornelius Nepos; in the history of particular states, after Thucydides, Livy, and Tacitus, and sometimes also in a general history; though in this latter case, the order of time cannot always be preserved, and therefore the actions of each nation, when several states are independent of each other, must necessarily be separated, in order to prevent confusion. This is the method adopted by Herodotus, Diodorus Siculus, and Justin.

There is one circumstance that deserves to be particularly mentioned, because it deserves the first attention of the intelligent and instructive historian; and this is, that in the conduct and management of his subject he should give it as much unity as possible; in other words, his history should not consist of separate unconnected parts merely, but should be bound together by some connecting principle, which shall make the impression on the mind of something that is one, whole and entire. Whether pleasure or instruction be the end sought by the study of history, either of them is enjoyed to much greater advantage, when the mind has always before it the progress of some one great plan or system of actions; when there is some point or centre to which we can refer the various parts related by the historian. Of all the ancient general historians, the one who had the most exact idea of this quality of historical composition, though, in other respects, not an elegant writer, was Polybius. In his third book he sketches out his own plan; observing, that the subject of which he had undertaken to write is, throughout the whole of it, one action, one great spectacle; how, and by what causes, all the parts of the habitable world became subject to the Roman empire. "This action," says he, "is distinct in its beginning, determined in its duration, and clear in its final accomplishment; therefore, I think it of use to give a general view before-hand, of the chief constituent parts which make up this whole." In another place, he congratulates himself on his good fortune, in having a subject for history, which allowed such variety of parts to be united under one view; remarking, that before this period, the affairs of the world were scattered, and without connection; whereas, in the times of which he writes, all the great transactions of the world tended and verged to one-point, and were capable of being considered as parts of one system.

Those who write the history of some particular great transaction, confining themselves to one era, or one portion of the history of a nation, have such great advantages for preserving historical unity, that they are inexcusable if they fail in it. Sallust's histories of the Catilinarian and

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Jugurthiné wars, Xenophon's *Cyropædia*, and his Retreat of the Ten-thousand, are instances of particular histories, where the unity of historical object is perfectly well maintained. Thucydides, otherwise a writer of great strength and dignity, has failed much, in this article, in his history of the Peloponnesian war. On this account, he is severely censured by one of the best critics of antiquity, Dionysius of Halicarnassus. This critic is partial to Herodotus, whom, both for the choice and conduct of his subject, he prefers to the other historian. But we may observe, that Herodotus wrote to the imagination, and Thucydides writes to the understanding. He was a grave, reflecting man, well acquainted with human life; and the melancholy events and catastrophes which he records, but which Dionysius finds fault with, are often both the most interesting parts of his history, and the most improving to the heart. Indeed, the distribution of his subject, which, though not deficient in dignity, wants the gaiety and splendour of that of Herodotus, is faulty, and the critic's observations upon it are better founded, and his preference of Herodotus, in this respect, is not unjust. With regard to style, Dionysius gives Thucydides the just praise of energy and brevity; but censures him, on many occasions, not without reason, for harsh and obscure expression, deficient in smoothness and ease. The historian, however, must not neglect chronological order; with a view to render his narration agreeable. He must give a distinct account of the dates, and of the coincidence of facts. But he is not under the necessity of breaking off always in the middle of transactions, in order to inform us of what was happening elsewhere at the same time. He discovers no art if he cannot form some connection among the affairs which he relates, so as to introduce them in a proper train. He will soon tire the reader, if he goes on recording, in strict chronological order, a multitude of separate transactions, without any other connection besides coincidence of event. Although the history of Herodotus be of greater compass than that of Thucydides, and comprehend a much greater variety of dissimilar parts, he has been more fortunate in joining them together, and digesting them into order. Hence he is a more pleasing writer, and gives a stronger impression of his subject; though, in judgment and accuracy, much inferior to Thucydides. He abounds, indeed, with digressions and episodes; but when these have any connection with the main subject, and are inserted professedly as episodes, the unity of the whole is less violated by them, than by a broken and scattered narration of the principal story. Among the moderns, the president Thuanus has, by attempting to make the history of his own times too comprehensive, fallen into the same error, of loading the reader with a great variety of unconnected facts, going on together in different parts of the world;—an historian otherwise of great probity, candour, and excellent understanding; but through the want of this unity, more tedious, and less interrelling than he otherwise would have been.

As history is a species of writing designed for the instruction of mankind, sound morality should always reign in it. Both in describing characters, and in relating transactions, the author should always shew himself to be on the side of virtue. To deliver moral instruction in a formal manner, falls not within his province; but both as a good man and as a good writer, it is expected, that he should discover sentiments of respect for virtue, and of indignation at flagrant vice. Neutrality and indifference, when occasions of this kind occur, are inexcusable; and indicate a culpable deficiency in sensibility and moral feeling. For the style of the historian, see *STYLE*.

So numerous and considerable are the qualifications necessary for an historian, that this province was formerly assigned by the eastern nations to a particular order of men; and both among the Greeks and Romans it was generally undertaken by persons of figure, and such as were eminent for learning, knowledge of the world, and other great abilities: and as it is of such singular service to mankind to have the records of past ages well and faithfully transmitted to posterity, it is to be wished that persons of similar character would, in all countries, undertake it.

Having illustrated the qualities of a good historian by direct or indirect references to ancient writers, it may not be improper to specify some instances in which the moderns have excelled in this kind of writing. Dr. Blair selects Italy as the country in Europe where the historical genius has, in latter ages, shone forth with the greatest lustre. Soon after the restoration of letters, Machiavel, Guicciardin, Davila, Bentivoglio, father Paul, became highly conspicuous for historical merit. All of them appear to have conceived very just ideas of history; and are agreeable, instructive, and interesting writers. They are not, however, without some imperfections, which have been pointed out by critics, and detailed by Blair. Among the French, many historical writers are spirited, lively, and agreeable; and some of them not deficient in profoundness and penetration. Nevertheless, France has not produced any such capital historians as Italy. In our own island, Scotland acquired reputation, at an early period, by means of the celebrated Beuchanan. He is an elegant writer, classical in his Latinity, and agreeable both in narration and description; but suspected to be more attentive to elegance than to accuracy; and inaccurate and imperfect in his political views; and charged with being deeply tinctured with the spirit of party. Among the older English historians, the most considerable is lord Clarendon: more impartial in his relation of facts than might have been expected, and distinguished by the spirit of virtue and probity which pervades his work. He maintains the dignity of an historian; and though his sentences are too long and his general manner prolix, his style is, upon the whole, manly; and his merit, as an historian, much beyond mediocrity. He is particularly admirable, and perhaps we may say unequalled in the drawing of characters. Some have asserted that he was the first Englishman who seems to have attempted to write history with any degree of dignity. But this assertion is not strictly accurate. Sir Walter Raleigh and Knowles made the attempt before him, and with no small success, and we may assert the same, in a great degree, concerning sir Francis Bacon and lord Herbert of Cheshire. However, Clarendon has, in this respect, exceeded all his predecessors. Bishop Burnet is lively and perspicuous; but his style is too careless and familiar for history; his characters are marked with a bold and a strong hand, but they are generally light and satirical; and he abounds too much in little stories concerning himself, that he resembles more a writer of memoirs than of history. For a just appreciation of his character as an historian, see the article *BURNET*. During a long period, English historical authors seemed to aim at nothing higher than an exact relation of facts; till of late the distinguished names of Hume, Robertson, and Gibbon, have raised the British character in this species of writing to high reputation and dignity. Dr. Blair observes, that of late years a great improvement has begun to be introduced into historical composition; which consists in a more particular attention than was formerly given to laws, customs, commerce, religion, literature, and every thing else that tends to shew the spirit and genius of nations. An historian is now expected to exhibit manners, as well as facts

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and events; and it must be allowed, that whatever displays the state and life of mankind in different periods, and illustrates the progress of the human mind, is more useful and interesting than the detail of sieges and battles. The introduction of this improvement into history has been chiefly owing to the celebrated M. Voltaire, whose age of Louis XIV. commanded the attention, and claimed the approbation of all Europe. See farther on this subject Ward's Oratory, vol. ii. lect. 42, 43, 44, and 45. Blair's Lectures, vol. iii. lect. 36.

The term historiographer is chiefly used for a person who has a peculiar charge and commission to write the history of his time. The historiographer to his majesty is an officer under the lord chamberlain; his salary 200*l.* per annum. There is an office of the same kind in Scotland with the same salary.

HISTORY, a recital or description of things as they are, or have been in a continued orderly narration of the principal facts and circumstances attending them. The word is Greek, *ιστορι*, *historia*; and literally denotes a search of curious things, or a desire of knowing, or even a rehearsal of things we have seen; being formed of the verb *ισορειν*, which properly signifies to know a thing by having seen it; though the idea appropriated to the term history is now much more extensive, and we apply it to a narration of divers memorable things, even though the relator only takes them from the report of others. The origin of the word is from the verb *ισπειν*, *I know*; and hence it is, that among the ancients several of their great men were called *polyhistores*, *q. d.* persons of various and general knowledge.

History is divided, with regard to its *subject*, into the *history of nature* and the *history of actions*.

HISTORY of Nature, or Natural History, is a description of natural bodies; whether terrestrial, as animals, vegetables, fossils, fire, water, air, meteors, &c. or celestial, as the stars, planets, comets, &c. Natural history is much the same with what we otherwise call *physiology*. See **Natural HISTORY and PHYSIOLOGY**.

HISTORY, with regard to *actions*, is a continued relation of a series of memorable events in the affairs either of a single person, a nation, or several persons and nations, and whether included in a great or little space of time; or, it is a narrative of such facts as are fit to be transmitted to posterity for the use of mankind and the better conduct of human life. Cicero calls history the mistress of life, (*De Orat. lib. ii. cap. 9.*) as it teaches us both what we ought to pursue and what we ought to avoid.

Thus Thucydides, among the ancients, excellently translated by Smith, and among the moderns, Stanyan, Leland, Gillies, Mitford, the abbe Barthelemi in his *Travels of Anacharis*, have written the History of Greece; Livy, among the ancients, and among the moderns, Catrou and Rouille, Rollin, Vertot, Hooke, Ferguson, Montesquieu, Crevier, Gibbon, &c. that of Rome; Mezeray and F. Daniel, of France; Tyrrel, Echard, Rapin, continued by Tindal, Carte, Guthrie, with the supplement of Ralph, Hume continued by Smollett, Henry, &c. Kennett, in his complete history, including the works of several writers, of whom the most distinguished, in point of historical composition and merit, are Milton, Daniel, Bacon, lord Herbert, Camden, and Wilson, &c. the History of England; Buchanan, not to mention John Major and Hector Boethius, whose works are now almost obsolete, Robertson, whose history is a classic production, and is thought by many to be the doctor's "Palmarium Opus," G. Stuart, sir D. Dalrymple, lord Hailes, Guthrie, &c. &c. of Scotland; O'Connor, Valancy, Ferdinando Warner, O'Halloran, Leland, Crawford, Carte

in his *Life of the Duke of Ormond*; sir James Ware in his *Lives of the Bishops and Writers of Ireland*, improved and enlarged by Mr. Harris, &c. &c. of Ireland; Dr. Powel, Warrington, &c. of Wales; Clarendon, the History of the Rebellion; and Thuanus, bishop Burnet, &c. the History of their own Lives and Times.

Eusebius, Baronius, &c. have written the History of the Church; bishop Burnet that of the Reformation, &c.

Several authors have written on the Method of reading and studying History; among the rest Lucian, Bodin, Vossius the Elder, Whear, Patrici, Beni, Mascardi, De Silhon, F. le Moine, F. Rapin, the abbot De St. Real, F. Thomassin, Frenoy, Priestley, &c.

One of the most useful directions for facilitating the study of history, says Dr. Priestley in his Lectures, (*Lect. 17.*) is to begin with authors who present a "Compendium," or general view of the whole subject of history, and afterwards to apply to the study of any particular history, with which a more thorough acquaintance is desired. The most celebrated epitome of universal history written in Latin, is Turfalin's, which is read in most of the foreign universities. Bossuet's Epitome of Universal History, is greatly and deservedly admired in France; but it brings the history no lower than the time of Charlemagne. One of the most useful epitomes, upon the whole, is that written by baron Holberg in Latin, and translated with improvements into English by Dr. Gregory Sharpe. Its principal defect is, that too little notice is taken of the history of Greece, and that other subjects are dispatched with too much brevity. The most valuable of the larger kind of epitomes are Rollin's of the ancient history, and Puffendorf's of the modern. One of the most obvious contrivances to reduce history into a short compass, and to make an entire course of it easy to be comprehended, and at the same time to observe a proper distinction between the parts of it, has been by "Chronological Tables." See **CHRONOLOGY**.

Much of the perspicuity of history depends on conceiving clearly the order of generations and the right of succession in regal and other families. In this respect, "Genealogical Tables" are of unspeakable use. (See **GENEALOGY**.) But the most ingenious and useful contrivance to facilitate the study of history, and to aid the imagination in conceiving distinctly, and comprehending the whole course of it, in all its parts, co-existent and successive, is the "Chart of History." This is properly a picture of all history, and is formed by such natural methods of expression, that it renders visible to the eye, without reading, the whole figure and dimensions of all history, general and particular, and so perfectly shews the origin, progress, extent, and duration, of all kingdoms and states that ever existed, at one view, with every circumstance of time and place, uniting chronology and geography, that it not only, in the most agreeable manner, refreshes the memory without the fatigue of reading; but a novice in history may learn more from it by a mere attentive inspection of a few hours, than he can acquire by the reading of many weeks or months. This chart must answer, in the completest manner imaginable, almost every use of a compendium of history, proper to be read before a larger and fuller course be entered upon; and it will prevent any confusion which might arise from reading particular histories without a regard to their proper order of time or place; better than any abstract of universal history whatever. For by casting our eye for a minute upon this chart, we see, at one glance, the contemporary state of the whole world at the period of which we are reading, and the preceding and succeeding state of the particular country,

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the history of which we are studying. Dr. Priestley has constructed a chart of this kind, of the same size with his chart of biography, drawn upon a like scale, and made to correspond to it in all respects. Among other methods of illustrating and retaining history, we may mention Mr. Grey's "memorial lines," serving to aid us in recollecting dates with exactness. To this we may add the use of a "common-place book," in which the most valuable fruits of history may be deposited.

We shall here subjoin the order in which the principal authors of antiquity should be read, so as to obtain from them a regular series of facts, comprising the history of Asia, Africa, Greece, and Rome, till the dissolution of the empire of Constantinople. The oldest history extant, next to the historical books of the Old Testament, is that of "Herodotus," who flourished about 450 years B.C., a little after the invasion of Greece by Xerxes. His history comprises probably every thing which he had an opportunity of learning concerning the history of the Lydians, Ionians, Lycians, Egyptians, Persians, Greeks, and Macedonians; and, computing from the earliest of his accounts to the latest, his history may be reckoned to commence about 713 years B.C., and to reach to about the year 479 B.C.; a period of about 234 years. A more particular account of several things in the period of which he treats, may be extracted from the following authors; *viz.* Justin (l. i. ii. iii. and vii.), Xenophon's *Cyropædia*, and the lives of Aristides, Themistocles, Cimon, Miltiades, and Pausanias, written by Plutarch and Cornelius Nepos; and those of Anaximander, Zeno, Empedocles, Heraclitus, and Democritus, by Diogenes Laertius. Next to Herodotus, "Thucydides" should be read. Introductory to his history of the Peloponnesian war, which was his principal and professed subject, he gives a summary view of the history of Greece, from the departure of Xerxes to the commencement of that war, which connects his history with that of Herodotus. To complete the period comprehended by his history, after his first book, the eleventh and twelfth books of Diodorus Siculus should be read, together with Plutarch's Themistocles, Aristides, Pausanias, and Cimon, and the second and third books of Justin. And, after the whole of Thucydides, the historical student should read the lives of Alcibiades, Chabrias, Thrasylubus, and Lysias, written by Plutarch or Cornelius Nepos, the fourth and fifth books of Justin, and the first book of Orosius. After Thucydides, the first and second books of "Xenophon's History of Greece" should be read. This completes the history of the Peloponnesian war, with the contemporary affairs of the Medes and Persians. After this, let the student proceed to the "expedition of Cyrus," and the return of the Greeks; and lastly, the remainder of his history of Greece, which contains an account of the affairs of the Greeks and Persians to the battle of Mantinea, which happened in the year 363 B.C.; so that all the historical books of Xenophon comprise a period of about 48 years. To complete the history of this period, recourse may be had to the lives of Lysander, Agesilaus, Artaxerxes, Thrasylubus, Chabrias, Conon, and Datames, written by Plutarch or Cornelius Nepos; the fourth and fifth books of Justin; and the thirteenth, fourteenth, and fifteenth of Diodorus Siculus. After Xenophon's works let the fifteenth and sixteenth books of Diodorus Siculus be read; these contain the histories of Greece and Persia, from the battle of Mantinea to the beginning of the reign of Alexander the Great, in the year 336 B.C. After these two books of Diodorus, let Arrian's history of Alexander be read; and for completing this history, let the reader recur to Quintus Curtius, the tenth and eleventh books of Justin, and Plutarch's life of

Alexander. After Arrian, let him peruse the eighteenth, nineteenth, and twentieth books of Diodorus Siculus, which contain the history of Greece from the year 323 B.C. to the year 301; and to complete this period, the thirteenth, fourteenth, and fifteenth books of Justin, and the Demetrius and Eumenes of Plutarch. After the books of Diodorus, read from the sixteenth to the twenty-ninth book, inclusive, of Justin, which brings down the history to about the year 195 B.C. After Justin, read Plutarch's lives of Pyrrhus, Aratus, Agis, Cleomenes, and Philopomen. The lives of illustrious men written by Plutarch, who flourished about the year 130 after Christ, make an excellent supplement to universal history. To complete the history furnished by these lives of Plutarch, read the fragments of Diodorus. Lastly, in the regular order of history, read the thirtieth book of Justin, and all that follow till the two last, which completes the history of Greece till it is blended with that of the Romans. All the histories above-mentioned are written in Greek, except those of Justin, Quintus Curtius, and Cornelius Nepos, which are in Latin.

The following course of "Roman History" may be considered as comprehending all that is now to be learned of the subsequent ancient history of all other nations, besides Greece and those comprehended in its history. The writer who treats of the early part of the Roman history, in the fullest and most satisfactory manner, is "Dionysius of Halicarnassus," who brought down the history of Rome as far as the beginning of the first Punic war. But of his work, which consisted of twenty books, the eleven first are all that are extant, and they end at the year 341 B.C., the time when the consuls resumed the chief authority in the republic, after the dissolution of the decemvirate. To complete the history of the period of which he treats, read Livy (l. i. ii. and iii.), Plutarch's Romulus, Numa Pompilius, Valerius Poplicola, Coriolanus, and Camillus. After Dionysius, read from the fourth to the tenth book inclusive of Livy, which brings the history of Rome to the year 292 B.C. To supply the chasm between the tenth and twentieth books of Livy, read Polybius, particularly the first and second books, which treat chiefly of the first Punic war; the epitome of the second decad of Livy, books seventeen, eighteen, twenty-two, and twenty-three of Justin, fourteen chapters of the fourth book of Orosius, the fourth and fifth of the third book of the "historia miscellanea" of Paulus Diaconus, Plutarch's Marcellus, and Fabius Maximus; the second tome of the *Annals* of Zonaras, and Appian's Punic and Illyrian wars. After Appian should be read the remainder of Livy, from the twenty-first book to the end, which brings the history to the year 166 B.C., and the epitome to the end. To complete the last books of Livy, read Plutarch's Hannibal, Scipio Africanus, Quintus Flaminius, Paulus Æmilius, and Cato Major. After this read his Gracchi, Marius, Sylla, Cato Minor, Sertorius, Lucullus, Pompey, and Brutus. The reader of history must next proceed to Sallust's history of the war of Jugurtha, which happened 100 years B.C., and of the conspiracy of Catiline, which happened 62 years B.C. Next should follow Julius Cæsar's Commentaries of his own wars, and the supplement by Hirtius and others. To obtain a clear idea of this important period of time, Cicero's epistles, especially those to Atticus, should not be overlooked. The history of Dio Cassius comprised all the time from the building of Rome to the reign of Alexander; but to supply the want of the last twenty, we must be content with what Xiphilinus, who wrote A.D. 1050, has given us in a compendium of them. The period of which Dio Cassius treats will be made more complete by Velleius Paterculus, who lived

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lived under Tiberius. We should then have recourse to Suetonius's lives of the twelve Cæsars; and next to Tacitus's annals and history. This history contains a fund of political knowledge, and, on that account, is very proper to be studied by princes and ministers of state. Tacitus is the last Roman historian who is worth reading, except barely for those *faits* which we have no other method of becoming acquainted with. Suetonius and Tacitus are generally placed in what is called the "silver age" of the Latin tongue; but all the succeeding writers are universally thrown into the "brazen," or "iron" age. These, in the order according to which they should be read, are, the lives of Nerva and Trajan by Aurelius Victor or Xiphilin, Spartian's Adrian, Capitolinus's Antoninus, Herodian, the *Scriptores Romani*, or *Historiæ Augustæ Scriptores*, viz. Spartianus, Lampridius, Capitolinus, Vulcatius, Trebellius Pollio, and Vopiscus supplying the chasm in these writers between Gordian III and Valentinian, from Aurelius Victor, and then the history will be brought down to A.D. 283. Eutropius will furnish a good epitome of the Roman history till about this time, in Latin. All the writers of the Roman history from this time are Greek, except Ammianus Marcellinus; they are Zozimus, A.D. 507; Zonaras, A.D. 1119; Jornandes, A.D. 540; Ammianus Marcellinus, A.D. 375; Procopius, A.D. 502; Agathias, A.D. 567; Nicetas Acominatus, A.D. 1203; Nicephorus Gregoras, A.D. 1341; and Johannes Cantacuzenus, A.D. 1350. In this enumeration we ought not to have omitted a celebrated female historian, viz. Anna Comnena, the daughter of Alexius I., emperor of Constantinople, who wrote the history of the reign of her own father, in which she makes the first mention of the arrival of the crusaders at Constantinople, and gives an account of their conduct during their residence in that city, and their passage into Asia. Her narration is not very favourable to the crusaders. The conclusion of the history of Constantinople, with the rise and progress of the Turks, may be learned from Laonicus Chalcondiles, who put an end to it. He begins his history with Ottoman, the son of Orthogul, who began to reign about the year of Christ 1300. His work consists of ten books, and brings the history to the year 1453, in which Constantinople was taken by Mahomet II.

Of all the modern compilations, derived from these sources of historical knowledge, none are so useful as those which treat of the manners, customs, and laws of the Greeks and Romans. The most complete body of Greek and Roman antiquities is that of Grævius and Gronovius; but this is voluminous and expensive. A person may acquire knowledge enough of this kind, for the purpose of reading the Greek and Latin historians, in Potter's excellent and compendious system of Greek antiquities, and in Kennett's *Antiquities of Rome*. Books which contain collections of coins and inscriptions should not be neglected; the principal collectors of these kinds of records are Gruter, Lipsius, Chishul, Montfaucon, Prideaux, Mazochius, and Fleetwood for inscriptions; and Spanheim, Ursinus, Patin, Vailant, Hardouin, and Goltzius for coins. In studying the Roman history, a person should become conversant with the civil law, which contains the history of the domestic policy of that great people. He should therefore acquaint himself at least with "Justinian's Institutes;" which contain an authentic outline of their policy. The modern compilations of ancient history are very numerous; but the most complete are "Rollin's" and the "Universal History." Rollin's ancient history has been often recommended to young persons, and it well deserves their attention. Though the

author is only a compiler, he is eloquent. He always writes on the side of virtue, and his moral reflections are useful; though he cannot be considered as distinguished by an extraordinary degree of critical sagacity. The "Ancient Universal History" is a work of established reputation and utility. Its references to original authors are numerous; and though it is, with respect to judgment and style, very unequal, and its chronology is various, as it was executed by different persons, yet it indicates unquestionable traces of labour in research, and impartiality in detail. Its faults, compared with its excellencies, are trifling. The oriental part is particularly entitled to applause, as it conveys a variety of knowledge, which could not otherwise have been easily obtained. One principal advantage is, that it gives a separate history of every individual nation, however inconsiderable; so that we see at once its relative importance, and its connection with the greater empires, by which it might, at length, be swallowed up. The best editions of the ancient universal history are, that in folio, and the first which appeared in 8vo.

As for those who wish to study the English history by the perusal of the works of original writers, and who have leisure for this purpose, we would refer them for an account of them to Nicholson's *English Historical Library*. Hence, and from other sources of information, they will be led to acquaint themselves with Gildas, the most ancient British historian, who was born in the year 520, and published his treatise "De excidio Britannia" towards the close of his life; the venerable Bede, who was born in 672 or 673; Nennius in 830; Hoel Dha's laws, enacted about the middle of the tenth century; Geoffrey of Monmouth, about the year 1150, the greater part of whose work is fabulous; Caradoc, monk of Llanrwst, contemporary with Geoffrey, who wrote a history of the petty kings of Wales, translated from the Latin original into English, by Humphrey Llwyd, and enlarged by Dr. Powel, and again by W. Wyn, &c. The oldest history of the Saxon affairs is the "Saxon Chronicle," first published by Abraham Wheelock, the work of unknown authors, and terminating at various periods from 977 to 1154. The earliest account we have of the reign of Alfred is that of Asserius, his contemporary: the next Saxon historian is Ethelward, or Edward Paritius in 1090, who continued his chronicle of the Saxon kings no farther than Edgar. Many things relating to the civil government of these times are dispersed in some particular lives of their saints and kings; particularly those of Offa, Oswin, Ethelwolf, and Edward the Confessor. Of the later writers of the Saxon affairs we may mention Verstegan in his "Restitution of decayed intelligence in Antiquities," corrected by Sheringham and Somner; Selden in his "Analecta;" and Sheringham in his treatise "De Anglorum gentis origine." The "Sachsen Spiegel," or "Speculum Saxonicum," is an excellent manual of the old laws of the ancient Saxons. The history of Great Britain, in certain periods of it, is much connected with the histories of Norway and Denmark; and therefore the Danish antiquities should be investigated, and the Runic characters understood. The Danish antiquary should also be acquainted with the best Islandic historians, the most ancient of whom is Aras Frode, contemporary with Sæmond, about the year 1124; part of whose history of Iceland was published in 1689 by the bishop of Skalholt. There are two Norwegian histories which should be consulted; the former written soon after the year 1130 by Theoderic, a monk, and the other compiled by Snorro Sturlesonius, both of whom draw their materials from the ballads of the Scaldri, whose historical poems, it is generally thought, may be depended upon.

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Two Danish historians, of principal importance to the English antiquary, in the judgment of Mr. Nicholson, are Saxo Grammaticus, and his contemporary Sweno Agonis, of both which we have an excellent edition by Stephanus. The former died at Roschild in 1204; and by his own account, he compiled his history out of the Icelandic ballads; and Sweno declares that he compiled his from the traditions of old people. The great restorer of the decayed antiquities of Denmark was Olaus Wormius, in his "Literatura Runica," and "Monumenta Danica," to whose discoveries an addition has been made by Thomas Bartholine. Much light has lately been thrown on this subject by various antiquaries, and particularly by Mr. Jonstane, professor Thorkelein, and Mr. Pinkerton. The first of our English historians after the conquest was Ingulphus of Croyland, who begins A.D. 626, and ends A.D. 1089. About the same time Marianus Scotus brought down our English history as low as the year 1083. The earliest history in the 12th century was written by Florentius Bravonius, a monk of Worcester, whose book ended with his life in 1119; but it was continued 50 years farther by another monk of the same monastery. Our next historian was Eadmerus, a monk of Canterbury, whose "Historia Novorum, &c." was published by Mr. Selden, and extends from 1066 to 1122. William of Malmesbury is one of the most important and valuable of our ancient historians. He is highly commended by Leland and others. He wrote "De gestis regum Anglorum" in five books, with an appendix in two more, which he styles "Novellæ historiæ." His history comprehends the affairs of England from the first arrival of the Saxons to the close of the reign of king Stephen. Simeon Dunelmensis, monk of Durham in 1164, author of "De Gestis Regum," commences with the death of Bede in 732 and ends in 1129. Ealred, abbot of Rievaulx, gives a short genealogy of our kings to Henry II., but chiefly enlarges in praise of David king of Scots, founder of many Cistercian abbeys. About the same time flourished Henry, archdeacon of Huntingdon, whose eight books, concluding with the reign of king Stephen, were published by sir Henry Savile. William of Newberry begins at the death of Henry I., and ends in the year 1097. The 13th century begins with Gervase monk of Canterbury, who is said to have been a judicious antiquary and methodical historian, and to have made an excellent collection of the British and English history from the arrival of the Trojans to the year 1200. All that is extant commences with the year 1112, the 12th year of Henry I., and ends with the death of Richard I. It bears the character of being executed with great judgment. Cotemporary with these two, was Roger de Hoveden, chaplain to king Henry II., who has deduced our history to the year 1202, the 4th year of king John's reign. The next historian of note is Ralph de Diceto, dean of London, who, about the year 1210, composed two treatises, entitled "Abbreviationes Chronicorum," comprising an abstract of our history, chiefly ecclesiastical, down to the conquest, and "Imagines historiarum," containing the history of some of our kings, terminating with the first year of king John's reign. Selden much admires this author and his works. These writers were soon succeeded by Matthew Paris, a monk of St. Alban's, who is reckoned the first in value and reputation of all our ancient historians. His history comprehends a very important period, from the beginning of the reign of William I. to the end of that of Henry III., and the information it contains is equally curious and useful. His mode of writing is, on the whole, pleasing and agreeable, and his composition simple and perspicuous. The spirit with which he exposes the

pretensions and conduct of the Roman pontiffs is admirable; and it is no wonder that, on this account, he should be disparaged by Bellarmine and Baronius. His history was first published at London in 1571, and at Zurich in 1589. It again appeared in 1606; but the best edition is that of Dr. W. Watts in 1640. Watts's edition again appeared in 1684, but this edition is not equal to the first impression. The 14th century begins with Thomas Wikes, whose history begins at the conquest, and ends at the death of Henry I., A.D. 1304. Nicholas Trivet, who was buried in the year 1328, and his contemporary, Roger Cestrensis, deserve cursory mention. The chronicle of John Brompton begins with the coming in of Augustin the monk in 528, and ends with the death of Richard I. A.D. 1198: this author has given a collection and version of the Saxon laws in Latin, made in the time of Edward III. The chronicle of Walter Hemmingford, who flourished in the reign of Edward III. begins in 1066, and ends with the year 1308. Ralph Higden wrote a history, styled "Polychronicon," chiefly compiled from the writings of other, and old chronicles now lost. He died in the year 1377. John, vicar of Tinmouth, was a great collector of English histories, which he digested in three very large volumes; they chiefly relate to the miracles of English saints. He was a monk of St. Alban's in 1366. Matthew, a Benedictine monk of Westminster, was a great collector of former historians, and therefore usually styled "florilegus." His history ends at the year 1307, which he probably did not long survive. It was continued by others; chiefly by Adam Merimuth, canon regular of St. Paul's, who begins in 1302, and ends in 1380, probably the year of his death. Henry Knighton wrote a chronicle "Of the Events of England," from the time of Edgar, in 958, to the year 1395, the 19th year of Richard II. in whose time he lived. Although he does not rank high as an historian, he is valuable for the account he gives of the proceedings against Richard II. from which it appears how free our constitution was overflooded to be at that period, and how great were the prerogative and power of parliament. His "Chronicon, de Eventibus Angliæ," and his "Historia depositionis Ricardi secundi," are both preserved in Twifden's "Decem Scriptores." The 15th century was one of the most rude and illiterate ages. Amongst the few eminent for learning was sir John Froissart, whose work contains a general history of the affairs of France, Spain, and other parts of Europe; but he also particularly insists on the wars between the English and French, from 1335 to 1400. (See his biographical article.) The next historian worthy of notice is Thomas Walsingham, a monk of St. Alban's, and probably regius professor of history in that monastery, about the year 1440. His short history begins at the conclusion of Henry the Third's reign, where Matthew Paris ends, and is continued to the end of Henry V. His "Hypodigma Neultriz," regards the affairs of Normandy from the time of Rollo to the sixth year of Henry V. in which are many occurrences not elsewhere to be found. William Caxton continued a history begun by the monks of St. Alban's, which commenced with the first inhabitants of this island, to the last year of Edward IV. 1483. The whole work bears the title of "Fructus Temporum." John Ross travelled over England, and made collections out of the libraries to which he had access, pertaining to the history and antiquities of this kingdom. They are preserved in the British museum; and contain many particulars that illustrate the antiquities of our universities. Of the historians above recited, those whose works are entitled to diligent perusal by the historical student, are Ingulphus, Eadmerus,

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William of Malmſbury, Roger de Hoveden, William of Newberry, Matthew of Paris, Matthew of Westminster, Henry Knighton, and Froiſſart. Moſt of our ancient hiſtorians will be found in ſir Henry Savile's "Quinque Scriptores Anglicæ Hiſtoriæ," 1596; in the "Decem Scriptores" of 1629; in the "Decem Scriptores" by Twiſden, in 1652; in the "Rerum Anglicanarum Scriptores," published at Oxford in 1684; and in the two volumes of Dr. Gale, the firſt containing five, and the ſecond 15 hiſtorical writers. There are ſeparate editions of Merianus and Duo-dechinus, of Florentius, of Eadmerus, of Matthew Paris, of Trivet, of Matthew of Westminster, of Froiſſart, of T. Walsingham, and of W. Caſton. Of the hiſtorians in the 16th century, we may mention Robert Fabian, who died in 1512, whoſe "Hiſtoriarum Concordantiæ," bring down the hiſtory from Brutus to William the Conqueror, in the firſt ſix books; and in the ſeventh he gives the hiſtory of our kings from the Conqueror to Henry VII.; Polydore Virgil, an accompliſhed writer, who wrote the hiſtory of our nation in Latin to Henry VIII.; Edward Hall, who died in London in 1547, and who wrote a diſſuſe account of the wars between the houſes of York and Lancaſter, dedicated to Henry VIII.; Harriſon and Hollinghead, whoſe chronicle is greatly eſteemed; and the ſecond edition of this hiſtory was continued to the year 1586 by John Hooper, alias Vowel. In the 17th century the firſt author who occurs is John Stow, who was an induſtrious ſtudent, and a critical collector; he died in 1605; John Speed wrote a chronicle, which is the largeſt and the beſt, ſays Nicholſon, that is extant; it begins with the firſt inhabitants of this iſland, and ends with the union of the two kingdoms under king James, to whom it is dedicated; Richard Baker, who died in the Fleet, in 1644, published a chronicle, which was well received; the author himſelf wrote the hiſtory of our kings from the Romans to the end of the reign of James I. and it was continued to the reſtoration by Edward Philip. In later times we have had a great number of hiſtorians, or compilers of hiſtory. Among theſe we may enumerate ſir Winſton Churchill, Sandford, Brady, a zealous advocate for the royal prerogative, Tyrrel, a ſtrenuous defender of the ancient rights and privileges of the people, Echard, now almoſt forgotten; Carte, a non-juror and a Jacobite, whoſe general hiſtory, notwithstanding his peculiar opinions and attachments, is undoubtedly a production of great merit in point of information; Guthrie, much neglected, but un-deſervedly, as he is a faithful and diligent writer, who had recourſe to original evidence, though in the latter part of his work he inclines too much to Tory principles; and Ralph, whoſe critical hiſtory of the reigns of Charles II. and James II. is a ſupplement to Guthrie, and is a curious and valuable performance. The more conſiderable hiſtorians, whom we ſhall mention, are Clarendon, of whoſe hiſtory we have already given an account; Whitelocke, whoſe Memorials contain a rich repository of moſt valuable materials; Ludlow, an honeſt and zealous republican; Burnet (ſee his article, and above); Rapin, who ſpent 20 years in the compoſition of his excellent hiſtory, and who, though tedious, is on the whole faithful and impartial; Tindal, the continuator of Rapin, Hume, Smollet, Henry, Lyttelton, Harris, Macaulay, &c. &c. &c.; and a great number of others, who have written hiſtories of particular lives and reigns, and whoſe names we cannot recite.

Hiſtory, with reſpect to *time*, is divided into *ancient* and *modern*, diſtinguiſhed into ſeveral epochs, periods, and intervals.

The three periods of time into which hiſtory has been divided are the following, *viz.* the *firſt*, from the creation to

the deluge, which age is reckoned uncertain, becauſe we know no more than the ſhort account given of it in the holy ſcriptures; the *ſecond*, from the deluge to the firſt Olympiad, which, from the many feigned ſtories related in it, is called the fabulous age; the *third*, from the firſt Olympiad to our own times, is called *hiſtorical*, becauſe the actions done in that period are recorded by writers of true hiſtory. See AGE and CHRONOLOGY.

The moſt ancient of the Greek hiſtorians now left is Herodotus, who lived, according to ſir Iſaac Newton's Chronology, 157 years after the building of Rome. And as to the Romans, Livy himſelf confeſſes, that there were ſcarcely any certain memoirs of their affairs till the city was taken by the Gauls, which was above 100 years later than Herodotus; the accounts before this time having been preſerved chiefly by tradition.

Hiſtory, with reſpect to its *ſubject*, is divided into *univerſal* and *particular*, *ſacred* and *profane*.

F. Menſtrier gives us the proper characters of the divers kinds of hiſtory with great accuracy. He diſtinguiſhes hiſtory with regard to both its matter and its form, and gives curious inſtances of each particular.

Hiſtory, with regard to its *matter*, is either *ſacred*, or *natural*, or *civil*, or *perſonal*, or *ſingular*; to which ſome have added *artificial hiſtory*, giving an account of the origin and progreſs of arts; and *miſcellaneous hiſtory*, which recites many various things as they promiſcuouſly occur in human life.

HISTORY, ſacred, is that which lays before us the mysteries and ceremonies of religion, viſions, or appearances of the Deity, &c. miracles, and other ſupernatural things, of which God alone is the author. Such are, the book of Geneſis, the Gospels, Apocalypſe, &c. See MIRACLES, PROPHECY, REVELATION, &c.

To this we may refer *eccleſiaſtical hiſtory*, which gives an account of the riſe and eſtabliſhment of the ſeveral religions and churches, of the riſe and progreſs of various opinions, ſects, &c. In ancient *ſacred hiſtory*, otherwiſe called the hiſtory of the Old Teſtament, there are ſeven remarkable periods. The firſt comprehends 1656 years, from the creation of the world to the deluge; (ſee *SACRED CHRONOLOGY*.) The ſecond period includes 857 years, from the deluge to the going forth of the Iſraelites out of Egypt. (See DELUGE.) The third period begins with the exodus of the Iſraelites in 2513, extends to the times of the kings, and includes 396 years. (See EXODUS.) The fourth period begins in the year of the world 2909, or from the beginning of the government by kings, and extends to the end of the Babyloniſh captivity, or 3468th year of the world, including 559 years. (See CAPTIVITY.) The fifth period amounts to 372 years, from the year of the world 3468 to the year 3840, or to the times of the Maccabees. (See MACCABEES.) The ſixth period begins with Judas Maccabæus, A.M. 3840, and is continued to the year 3964, or to Herod the Great, comprehending 124 years. (See HEROD the Great.) The ſeventh, or laſt period reaches from Herod the Great to the deſtruction of Jeruſalem, or the 70th year after the birth of Chriſt, conſtaining 106 years. See JERUSALEM.

In more *modern ſacred hiſtory*, more properly called *eccleſiaſtical hiſtory*, which denotes a clear and faithful narration of the tranſactions, revolutions, and events that relate to the external and internal ſtate of the Chriſtian church, Dr. Moſheim has diſtinguiſhed four remarkable periods. The firſt comprehends the ſtate and viciffitudes of the Chriſtian church, from its commencement to the time of Conſtantine the Great. The ſecond period extends from the reign of Conſtantine to

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that of Charlemagne, which produced such a remarkable change in the face of Europe. The third period contains the history of the church from the time of Charlemagne to the memorable period when Luther rose in Germany to oppose the tyranny of Rome, and to deliver divine truth from the darkness that covered it. The fourth period reaches from the time of Luther to the present times. On this plan Dr. Mosheim's ecclesiastical history, a work deservedly held in great esteem, is divided into four books, containing the history of the centuries comprehended by the above periods according to the order of time. (See Holberg's Introduction to Universal History, translated by Dr. Sharpe, with notes, &c., p. 55, &c. ed. 1758; and Mosheim's Ecclesiastical History, translated by Dr. Maclaine, with notes, &c. comprised in 6 vols. 8vo. vol. i. p. 12.) To this work Dr. Warburton, the late learned bishop of Gloucester, bears the following testimony: "Mosheim's Compendium is excellent, the method admirable indeed, the only one deserving the name of an ecclesiastical history." He adds, "It deserves frequent notes."

HISTORY, natural, is a description of the singularities of nature, its irregularities and prodigies, and the alterations it undergoes in the birth, progress, end, and use of things. Such is Aristotle's History of Animals, Theophrastus's History of Plants, and the entire body of Natural History by Pliny; such also are Acoſta's Natural History of the Indies, Plott's History of Staffordshire, &c.

HISTORY, civil, is that of people, states, republics, communities, cities, &c. Such are those of Thucydides, Halicarnassus, Livy, Polybius, Mezeray, F. Daniel, Milton, Buchanan, &c.

Civil history may again be subdivided into *particular* and *general*: the former consists of a number of facts relating to the same state, suitably connected and laid together in a proper series; such are Thucydides's History of the Peloponnesian War, comprising the events of the first twenty years of that war; Sallust's History of the War between the Romans and king Jugurtha in Africa; and Cæsar's History of his own Gallic and civil Wars: the latter, or *general history*, is made up of several particular *histories*, whose separate transactions within the same period of time, or part of it, should be so distinctly related as to cause no confusion; such are those of Diodorus Siculus, of Herodotus, of Justin, of Xenophon, and of Polybius, among the ancients; and Thuanus's History; Lord Littelton's History of Henry II; Dr. Robertson's History of Charles V. &c. among the moderns.

Civil history, in its more unlimited extent, is denominated *universal history*. See HISTORY with regard to *actions*, *supra*.

HISTORY, personal, is that which gives the portrait or life of some single person. Such are the lives of Plutarch, Cornelius Nepos, Suetonius, &c. and the lives of the painters, philosophers, saints, &c.

Personal history is the same with what we otherwise call *biography*, and may be denominated *literary history*, as it records the lives and productions of learned men, the controversies that subsisted amongst them, and the rise and advancement of sciences. See BIOGRAPHY.

HISTORY, singular, is that which describes a single action, siege, battle, or even a war or expedition, &c. Such was the conspiracy of Catiline to subvert the Roman state written by Sallust.

History, with regard to its *form*, is either *simple*, or *figurative*, or *mixed*.

HISTORY, simple, is that delivered without any art or foreign ornament; being only a naked and faithful recital of

things, just in the manner and order wherein they passed. Such are the Chronicles of the Eastern Empire, the Fasti, Chronological Tables, Journals, &c.

HISTORY, figurative, is that which is farther enriched with ornaments, by the wit, ingenuity, and address of the historian. Such are the political and moral histories of the Greeks, Romans, and most of the moderns.

This latter is a kind of rational history, which, without stopping at the shell or outside, the appearances of things, discovers the secret springs and movements of the several events; it enters into the thoughts, the breasts of the persons concerned therein; discovers their intentions and views; and, by the result of enterprizes and undertakings, discovers the prudence or weakness wherewith they were laid, conducted, &c. These are much the most useful and entertaining histories. To this class may be particularly referred the Histories and Annals of Tacitus, among the ancients; and those of Guicciardin, Thuanus, and bishop Burnet, among the moderns.

HISTORY, mixed, is that which, besides the ornaments of figured history, calls in the proofs and authorities of simple history, furnishing authentic memoirs, or original letters, manifestoes, declarations, &c. to vouch the truth of what is said. Such are Histories or Collections of Rushworth, M. Rapin Thoyras's History of England, the Genealogical Histories of Duchesne, M. De Marca's History of Berne, &c.

We shall close this article of History in general, with a brief recapitulation and illustration of the benefits that are likely to result from the diligent study of it; and here we shall avail ourselves of the excellent remarks of Dr. Priestley in his "Lectures on History." The first and lowest use of history is, that it agreeably amuses the imagination, and interests the passions, and, in this view of it, it far surpasses all works of fiction. The latter resembles those machines that are contrived to illustrate the principles of philosophy, such as globes and orreries, the uses of which extend no farther than the views of human ingenuity: whereas real history resembles the experiments made by the air-pump, the condensing engine, or electrical machine, which exhibit the operations of nature, and the God of nature himself, whose works are the noblest subject of contemplation to the human mind, and are the ground-works and materials of the most extensive and useful theories. Fiction requires a variety of embellishments to excite and interest the passions; whilst the mere thought that we are listening to the voice of truth serves to keep the attention awake through many dry and indigested narrations of facts. The next, and higher use of history, is to improve the understanding, and strengthen the judgment, and thus to fit us for entering upon life with advantage. History presents us with the same objects which occur to us in the business of life, and affords similar exercise to our thoughts; so that it may be called anticipated experience. In some respects it will be a better guide to us in the conduct of life than experience: because the examples which it presents to us are generally complete, and we see them through a less partial medium than that of experience. History is, therefore, of great importance not only to the advancement of political knowledge, but to that of knowledge in general, because the most exalted understanding is merely a power of drawing conclusions, and forming maxims of conduct from known facts and experiments, of which necessary materials of knowledge the mind itself is wholly barren, and with which it must be furnished by experience. By improving the understanding history frees the mind from many foolish prejudices that tend to mislead it. Such are those prejudices of a national kind, that have induced an unreasonable

unreasonable partiality for our own country, merely as our own country, and as unreasonable to foreign nations and foreign religion, which nothing but the enlarged views resulting from history can cure. It likewise tends to remove those prejudices that may have been entertained in favour of ancient or modern times, by giving a just view of the advantages and disadvantages of mankind in all ages. To an inhabitant of Great Britain it will be one of the greatest advantages resulting from the study of history, that, so far from producing an indifference to his own country, it will dispose him to be satisfied with his own situation, and render him, from rational conviction, and not from blind prejudice, a more zealous friend to the interests of his country. It is from history that all future improvements in the science of government must be derived, and this science, it will be allowed, is of primary importance and interest to those who have sufficient abilities for the study of it, and who are friends of mankind. Another very capital advantage of history is, that it tends to strengthen the sentiments of virtue. It conduces to this purpose by displaying the sentiments and conduct of truly great men, and those of a contrary character, and thus inspiring us with a taste for solid glory and real greatness; whilst it convinces us that these qualities do not consist in the attainments which mankind are too generally pursuing. That true greatness does not consist in riches may be evinced by the examples of Cincinnatus, Fabricius, Scipio Æmilianus, and other Romans in the early ages of their city, who were honoured for their poverty. The emperors Nerva, Trajan, Antoninus, and Aurelius, sold their palaces, their gold and silver plate, their valuable furniture, and other superfluities heaped up by their predecessors, and banished from their tables all expensive delicacies. These princes, together with Vespasian, Pertinax, Alexander Severus, Claudius the second, and Tacitus, who were raised to the empire by their merit, and whom all ages have admired as the greatest and the best of princes, were always fond of the greatest plainness in their apparel, furniture, and outward appearance. When the famous Cornelia, daughter of the great Scipio, was importuned by a lady of her acquaintance to shew her toilette, she deferred satisfying her curiosity till her children, who were the famous Gracchi, came from school, and then said "En! hæc ornamenta mea sunt." "These are my ornaments." Can we think that *honours* and *preferments* constitute true greatness, when history teaches us that the most worthy men have generally declined them? On the other hand, the extravagances of Alexander the Great in killing his best friends, the cruelties of the Spaniards in America, the ruin of Sweden by Charles XII. are certainly more proper to shew the folly and madness of unbounded ambition, than their victories are to dazzle our minds with their glare. Nothing so effectually cures a man of the absurd pride of *birth* and *family*, as seeing some of the greatest men in history, such as Tamerlane, cardinal Ximenes, and pope Sixtus V. rise from low beginnings. Even Vespasian laughed at those who pretended to derive his descent from Hercules. An excessive passion for *fame*, as an end of action, reduces a man very low in the light of history. On the contrary, how prodigiously does the character of Cato rise upon us by a few words of Sallust: "Maluit esse, quam videri, bonus;" "He rather chose to *be*, than to *seem*, good." The vanity of Nero upon his excelling in music, and gymnastic exercises, and of Commodus on his dexterity in killing wild beasts, completely exposes the affectation of gaining eminence in what is out of our proper sphere. The same maxim is conveyed by Philip, when he asked his son Alexander, if he was not ashamed to play on a musical instrument so well as he did. A simple

narration of some historical incidents excites an admiration of true greatness of mind more than the most elaborate description of it. What can give us a clearer idea of the noble sentiments of strict honour and integrity, than Marshal Turenne's refusing a sum of money, which was offered him, if he would not march his army through a certain territory, because he had not intended to march that way! Does not every person's heart strongly feel the sentiments of benevolence, when he hears the good Titus exclaiming, that he had "lost a day," because he had done no person a good office in it! If a person be capable of forming any idea of greatness of mind in forgiving injuries, he will do it from hearing the following reply made by Lewis XII. to a courtier, who pressed him to punish a person who had offended him before he came to the throne; "It belongs not to the king of France to revenge the injuries offered to the duke of Orleans?" Or, what can give so just an idea of the true spirit and magnanimity of a soldier, as the reply that viscount Dorée made to Charles IX. of France, when he received an order from him to massacre the Huguenots; "I desire your majesty would employ me in what is *possible*." This example suggests also, that history enables us to form just ideas of the dignity and the weakness of human nature, both of which are extremely useful to us in life. When the earl of Peterborough, at the siege of Barcelona, was settling the terms of capitulation with the Spanish commander, news was brought him that, contrary to the suspension of arms stipulated between them, a party of the allied troops had broken into the town. The earl, with a noble spirit of true honour and heroism, told the Spanish general, that if he would give him leave to enter the town with his English troops, he would drive out his allies, and then return to finish the capitulation, which he actually performed. Without mentioning the fabulous story of Curtius, who is said to have leaped into a gulph, or of Codrus, who procured his own death to save his country, we may observe, that at the siege of Turin one Mica fired a mine, and purposely destroyed himself with the enemy. And how many commanders of ships have blown them up rather than strike their colours! Such facts, together with those which manifest the extent of genius, in men like Aristotle, Archimedes, and sir Isaac Newton, give us high ideas of the dignity of human nature, and the capacity of the human mind. History also, with equal fidelity, gives us a most affecting, and equally instructive view, of our deplorable weakness and frailty, exemplified in the occasional conduct of the greatest of men. What gross and humiliating superstitions have been manifested by men, in other respects, of sound and clear understandings, and of upright honest hearts! Pascal, one of the greatest geniuses and best men that ever lived, entertained a notion, that God made men miserable here in order to their being happy hereafter; and in consequence of this notion, he imposed upon himself the most painful mortification. He even ordered a wall to be built before a window in his study, which afforded him too agreeable a prospect. He also had a girdle full of sharp points next his skin, and while he was eating or drinking any thing that was grateful to his palate, he was constantly pricking himself, that he might not be sensible of any pleasure. It was through a similar weakness that the excellent Fenelon submitted without reserve to the arbitrary sentence of the pope, when he condemned a book which he had published, and even preached in condemnation of his own book, forbidding his friends to defend it. (See the articles FENELON and PASCAL.) Moreover, history tends to strengthen the sentiments of virtue, by the variety of views in which it exhibits the conduct of divine providence, and points out the hand of God in the affairs of men.

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For whatever suggests to us the idea of a divine being, either in the end, or means, of great events, must be favourable to piety and virtue. Who would have imagined, that the desire which Henry VIII. had to be divorced from his wife would have brought about the reformation in England? The indiscretion of a Portuguese priest, who would not give place to one of the king's officers in Japan, and the obstinacy of the Jesuits, in refusing to give up the house which a nobleman had given them, when his son claimed it back again, occasioned the extirpation of the Roman Catholic religion in that country. The history of Joseph, that of Esther and Mordecai, and many others that are recorded in the instructive pages of the Old Testament, supply facts to the same purposes. Great events, under the conduct of providence, are brought about contrary to the intention of the persons who were the chief instruments of them, and by the means which were intended to produce a contrary event. Thus persecution has been always the means of promoting the persecuted religion; and thus the well-known adage has been verified: "The blood of the martyrs is the seed of the church." Thus, likewise, Athens, Lacedæmon, Carthage, Rome, and many other states, have been ruined by their own successes. Philip II. of Spain, by his intolerable oppression, was the cause of the freedom of the states of Holland. A regard to divine providence is also extremely useful to heighten our satisfaction in reading history, and throw an agreeable light upon the most gloomy and disgusting parts of it. Moreover, history, in the misfortunes and hardships to which the most distinguished personages have been reduced, gives us a deep conviction of the instability of all human things, and prepares our minds to submit to adversity with more patience and resignation, as to a condition from which we see none exempt. What other sensation do we feel, while we read that Henrietta, daughter of Henry IV. of France, and wife to Charles I. of England, was reduced to the utmost poverty; and that her daughter, afterwards married to a brother of Lewis XIV. is said to have lain in bed for want of coals to keep her warm, while the people of Paris, blind with rage, paid no attention to her sufferings! Similar sensations are felt, when we read the history of Belisarius, the great and successful general, who is said to have begged his bread, and of Cortez, the renowned conqueror of Mexico, who lived unknown and disgraced in Spain, and was scarcely able to obtain an audience of his master, Charles V., though, when the king asked who was the fellow that was so clamorous to speak to him, he cried out, "I am one who have got your majesty more provinces than your father left you towns." Besides, the reverses of fortune, and calamities of men in high stations, should dispose those who have no opportunity of rising above them, to be content with their situation. The many who have abdicated royalty, as Christina, queen of Sweden, Charles V. emperor of Germany, Victor Amadeus, king of Sardinia, John Casimir, king of Poland, and others, convince us that crowns do not always sit easy; and that persons in high stations have need of a strong sense of honour and integrity to make their fatigues and misfortunes tolerable. In many instances they are objects, not of envy, but of commiseration; and they claim the exercise of a candid judgment. The examples of distinguished personages are apt to make a deeper impression on the mind than those of persons, subject to vicissitude, in the humbler stations of life. The insufficiency of power and riches to bound men's views and to make them happy, is evinced in a thousand instances of almost daily occurrence; but the sentiment makes a deeper impression when we see it exemplified in the history of statesmen and conquerors. It is beautifully exhibited in a

conversation which passed between Pyrrhus and his minister Cyneas, before their expedition into Italy. The minister asked the king what he proposed to do when he had subdued the Romans? He answered, pass into Sicily. What then? said the minister. Conquer the Carthaginians, replied the king. And what follows that? says the minister. Be sovereign of Greece, and then enjoy ourselves, said the king. And why, replied the sensible minister, can we not do this *last* now?

Besides the benefits resulting from the study of history, above briefly recited and illustrated, there are other advantages accruing to mankind from it, in a different manner, as only one instrument of recording transactions. How imperfect, *e. g.* without history, would be our knowledge of genealogies, and consequently of the order of important successions, and how precarious would be the advantage, resulting from conventions and treaties of all kinds, if all the articles of them were deposited only in the memory of the contracting parties. We read that the boundaries of the Grecian states were once determined by a verse of Homer, who, in his description of Greece, relates what they were in his time.

If history be of such distinguished use, we may easily answer a question that has been sometimes proposed; *viz.* at what age it is proper to be read. We need not hesitate in pronouncing, that it can neither be begun too early, nor continued too late. "If history amuse the imagination, exercise and improve the passions, inspire a taste for true glory, just sentiments of, and a love for, virtue, and thereby form the *temper*, and prepare man for conversing with the world; what can be more proper for young persons? And since the mind cannot be too well furnished in these respects, and men cannot have too large a stock of this *anticipated experience*, the study of it must be useful, while there remains any thing of the part we have to act on the theatre of the world. Moreover, since history furnishes materials for the finest speculations, and the most important sciences, it cannot but be of service while we make any use of our intellectual faculties." Prudence will direct those who have the conduct of the studies of young persons to make a proper selection. Histories, which tend chiefly to amuse the imagination, or enforce the plainest instructions in morals, ought rather to be recommended to persons in early life; and histories which furnish greater exercise for the judgment should be reserved for an age in which the judgment is riper. However, there can be no great inconvenience in young persons' being indulged in reading almost all histories promiscuously. No general history is better calculated for the use of such than that of Rollin.

As to the advantages that result from the study of *ecclesiastical history*, they are *general* or *particular*. In a general view of them, the history of the church presents to our view a variety of objects that are every way adapted to confirm our faith. When we contemplate, by the aid of it, the discouraging obstacles, the united efforts of kingdoms and empires, and the dreadful calamities which Christianity, in its very infancy, was obliged to encounter, and over which it gained an immortal victory, this will be sufficient to fortify its true and zealous professors against all the threats, cavils, and stratagems of profane and impious men; the great and shining examples, also, which display their lustre, more or less, in every period of the Christian history, must have an admirable tendency to inflame our piety, and to excite, even in the coldest and most insensible hearts, the love of God and virtue. Those amazing revolutions and events that distinguished every age of the church, and often seemed to arise from small beginnings and causes of little consequence, proclaim, with a solemn and respectable voice, the empire of pro-

vidence, and also the inconstancy and vanity of human things. And among other numerous advantages that result from the study of ecclesiastical history, it is none of the least, that we shall thus see the origin and occasions of those ridiculous rites, absurd opinions, foolish superstitions, and pernicious errors, with which Christianity is yet disfigured in too many parts of the world. This knowledge will naturally lead us to a view of the truth in its beautiful simplicity, will engage us to love it, and render us zealous in its defence; not to mention the pleasure and satisfaction that we must feel in researches and discoveries of such an interesting kind. But in a more particular view of this subject, those who are appointed to instruct youth in the public universities, and also those who are set apart for the service of the church, will derive from this study the most useful lessons of wisdom and prudence, to direct them in the discharge of their respective offices. The inconsiderate zeal and temerity of some, portrayed in their pernicious consequences, will teach circumspection; and the mistakes into which men of eminent merit and abilities have been betrayed will point out the errors to be avoided, and the sacrifices to be made, in order to maintain peace and concord in the church; and, on the other hand, illustrious examples and salutary measures will furnish a rule of conduct, a lamp to shew them the paths they must pursue. Besides, if we except the arms which scripture and reason supply against superstition and error, nothing can enable us to combat them with more efficacy than the view of their deplorable effects, as they are represented to us in the history of the church. Mosheim's *Ecl. Hist.* vol. i. Introduction.

HISTORY is also used for a *Romance*, or a fabulous but probable relation of a series of actions or adventures feigned or invented by the writer. See ROMANCE.

Such is the History of the Civil Wars of Grenada, the History of Don Quixote, the Ethiopic History of Heliodorus, &c.

HISTORY, in *Painting*. See HISTORICAL *Painting*.

HISTRIA, a peninsula, N.E. of the gulf of Venice. The first inhabitants of this country were probably Thracians, or more anciently Celtes. The Greeks called the part of the Danube with which they were acquainted "Ister," and it is probable that those who peopled Histria were more anciently known on the banks of the Ister. The principal place of Histria was Pola.

HISTRIO, in the *Ancient Drama*, signified an actor or comedian; but more especially a pantomime, who exhibited his part by gestures and dancing. See PANTOMIME.

Livy informs us that the histriones were brought to Rome from Etruria in the year of the city 391, Dec. i. lib. 7. See HISTER.

HISTRIO, in *Ichthyology*. See LOPHIUS *Compressus*.

HISTRIX, in *Zoology*. See HYSTRIX.

HIT, in *Geography*, a town of the Arabian Irak, on a river of the same name, which soon after joins the Euphrates; near it is a spring of naphtha and bitumen; 100 miles W. of Bagdad.

HITCH, on *Ship-board*, a word denoting a sort of knot or noose, by which one rope is fastened to another, or to some other object, and hence used for catching hold of any thing with a hook or a rope, and to hold it fast. Thus, when the boat is to be hoisted in, they say, hitch the tackles into the rings of the boat; and, when about to weigh anchor, hitch the fish-hook to the fluke of the anchor.

HITCH, in *Mining*, signifies a fault in some districts, and has been defined to be a narrow fissure whose up-throw or down-cast does not much exceed five feet; others have said that a hitch never entirely separates a coal-seam, or never deranges as much as its thickness: we believe, however, that

the miners are not more consistent or agreed on these distinctions, than in the meaning of near 70 names which they have among them for the highly curious phenomenon called a *fault*. See that article.

HITCHEL, the same with hatchel.

HITCHER, in *Nautical Affairs*, is a pole, armed with an iron point and hook, which is used on board of barges or boats for either pulling or shoving them to or off each other, or a wharf, ship, &c. On most canals pointed hitches are prohibited to the boatmen, on account of the damage they do to the lining of puddle in the bottom of the canal to retain its water, as mentioned in our article CANAL.

HITCHIN, in *Geography*, a large and ancient market-town and parish in the hundred of Hitchin and Pirton, Hertfordshire, England, is situated in a fertile valley, and surrounded by considerable eminences. It appears to have had its origin in the Saxon times, and was granted by Edward the Confessor to earl Harold, by the appellation Hitchche. In the Doomsday book it is called Hiz, a name that, according to Chauncy, it received from the little river Hiz, which flows through it. At the period of making that survey it belonged to the king, and was rated at five hides; two of which are described as lying "in monasterio hujus villæ." Hitchin church is a handsome edifice of stone, occupying the site of a more ancient fabric near the centre of the town, and apparently of the age of Henry VI. or Edward IV. The interior is spacious, and consists of a nave, chancels, and side aisles: its length is upwards of 150 feet; its breadth 67. The sepulchral monuments are very numerous. An inscription for sir Robert de Kendale, knight, and three effigies greatly mutilated, which are now placed under windows of the north aisle, are of more ancient date than the present structure. The first or most westward of these effigies represents a knight cross-legged, in chain armour; and was probably designed for one of the Baliols, who were lords of this manor during the 12th and 13th centuries. The other two figures are the effigies of sir Edward de Kendale, knight, lord of Hitchin, and his lady, who both died towards the end of the reign of Edward III. Some very fine brasses, of the 15th and 16th centuries, occur in different parts of the church; and the windows contain much painted glass. At a short distance south-east of the church was formerly the priory of Biggin, founded for nuns of the Gilbertine order; but at what period is uncertain. The site is now occupied by the school-house, and the appendant-estate is vested in trustees for charitable uses. Hitchin priory was founded for white Carmelites in the time of Edward II.: very few traces of it remain; on the immediate site is now a family mansion. The market at Hitchin, held on Tuesdays, has existed from an early period, and very large quantities of wheat and other grain are sold in it; probably in some degree from being free of toll, by prescriptive right. Two fairs are held annually for the sale of cattle, sheep, &c. Formerly the wool trade was very flourishing here; this town having become the residence of many merchants on the removal of the staple from Calais by Edward III. The town is divided into three wards, viz. Bancroft, Bridge, and Tile-house wards, and is governed by a bailiff, four constables, and two headboroughs for each ward. Among numerous charitable donations in this parish, are those of John Skynner, gent. who, in the year 1668, bestowed 300*l.* to build almshouses; 300*l.* to purchase lands for their endowment; 100*l.* to apprentice poor children; and 100*l.* towards the further endowment of the free-school. Hitchin is 34 miles distant from London: and, according to the returns under the population act of 1801, contained 674 houses (mostly irregular buildings),

buildings), and 3161 inhabitants. Chauncy's Historical Antiquities of Hertfordshire.

HITCHING, in *Horfemenfhip*, is to wriggle or move forwards by degrees, or to knock the legs together in walking.

HITHE, in *Geography*. See **HYTIE**.

HITSACKER, a town of the principality of Luneberg-Zelle, fituated on an ifland in the Jetze; 29 miles E. of Luneburg. N. lat. 53° 17'. E. long. 14° 12'.

HITTERO, or **HITTEREN**, an ifland in the Northern ocean, near the coaft of Norway. N. lat. 63° 32'. E. long. 8° 20'.

HIU, a city of China, of the fecond rank, in the province of Honan. N. lat. 34° 5'. E. long. 113° 35'.

HIVE, in *Rural Economy*, the name of a well known repository for bees. Bee-hives, in different places, and on different occafions, are of very different materials. In fome places the hollow trunk of a tree ferves the purpofe; in others they are made of four boards nailed together in the fhape of a long box, and placed with one end upon the ground, or upon a frame of wood-work erected for that purpofe. The moft ufual form of them, however, is conic and bell-fafhioned; and the common materials of which they are made are twifted ofier or ftraw, nicely matted together, and made into a fort of thick cords, bound round with ofier-bark. The laft is the moft common kind, and ferves perfectly well for all the purpofes of the bees, and of the perfons who make their profits of the honey. The lodgment is fufficiently warm and clofe for the bees, and a thin frame of boards defends it from being injured by the wet. But perfons of speculative difpofitions have at all times been delirious of feeing what paffed in the hive, and of obferving thefe indutrious infefts at their work: for this purpofe the ancients contrived a method of placing certain fquares or panes of a transparent matter, fuch as horn, or the lapis specularis, or ifinglafs, in fome parts of the fides of the hive, through which they might fee all that paffed within. This is mentioned by Aristotle, Pliny, and others; but it foon funk into difufe, and in later ages it has been fuppofed to be an idle attempt. Mouffet in particular ridicules it, and fays, that the bees within would immediately fpoil the transparence of any materials thus employed.

This practice of the ancients feems to have been firft revived in our country by Mr. Jeddie, who, in the year 1665, published his invention of boxes for preferving the lives of bees, and obtained a patent from king Charles. Thefe were improved by Jofeph Warder, phyfician at Croydon, who enriched his account of the ftructure and ufe of thefe boxes, with feveral other curious circumftances concerning bees, in his work entitled "The true Amazons, or the Monarchy of Bees." But this method was far from being generally known in the year 1680, fince Swammerdam feems to have been altogether unacquainted with it; and to this we are to impute the imperfections of that author's account of bees, becaufe, though a moft accurate and faithful writer, he had no opportunities of feeing what has been fince difcovered with this advantage.

Of late, however, this invention has been commonly praftifed. A transparent fort of bee-hive may eafily be made, by leaving certain fquares in a wooden hive open, and afterwards faftening clear glafs in thefe vacant fpaces; a frame of wood may cover the whole, fo that the light is not always let in upon the bees, and the covering may be removed when the obferver is to examine their operations. By this means it is found, that the fquares of glafs, when properly placed, will keep clean and tranf-

parent for many years; and when they are fullied, there are eafy methods of cleaning them, by taking them out and replacing them when they have been wiped. When the obferver places himfelf behind the hive, and has one of thefe fquares of glafs before his eye, he fees exactly all that paffes within, without incommoding or interrupting the creatures at their work. Thefe glafs hives, however, are chiefly objects of curiofity, though, in fome inftances, they have led to difcoveries that muft gradually contribute to the improvement of the economy of thefe ufeul infefts.

The principal advantage derived from hives of modern conftitution, is that of obtaining the honey and wax without recurring to the barbarous expedient of deftroying the bees. In the common method, a hole is dug near the hive, (generally in the month of September,) and a ftick, at the end of which is a rag that has been dipped in melted brimftone, is fixed in the hole; and, when the rag is fet on fire, the hive is immediately put over it, and the earth thrown up round it, fo that none of the fmoke can efcape; and thus the bees are inhumanly and needlefsly deftroyed. The heavieft and lighteft hives are treated in this manner; the former, becaufe they yield the greateft profit, with an immediate return; and the latter, becaufe the bees in them would not be able to furvive the winter. Thofe hives which weigh from fifteen to twenty pounds are thought to be the fitteft for keeping. The method of preferving the lives of bees has been brought to a confiderable degree of perfection by the late Mr. Thorley of Oxfordshire, and Mr. White of Suffolk. Mr. Thorley, who takes the lead in this improvement, prefers colonies to hives for the following reafons: 1. The more certain prefervation of many thoufands of thefe ufeul infefts. 2. Their greater ftrength, confifting in their number, and their correfponding fecurity from robbers. 3. Their greater wealth, arifing from their united labours. To this purpofe he tells us, that he has, in fome fummers, taken two boxes filled with honey (moft of it being pure virgin honey of the beft kind) from one colony, and left fufficient ftore for their maintenance: add to thefe advantages, the pleafure of viewing them, with the greateft fafety, at all feafons, even in their bufieft time of gathering, and their requiring much lefs attendance in fwarming time. The bees thus managed are alfo more effectually fecured from wet and cold, from mice, and other injuries.

Mr. Thorley's boxes are made of deal, which, being fpongy, fucks up the breath of the bees fooner than a more folid wood would do; and yellow dram-deal, tho' roughly feafoned, he fays, is the beft.

The beft form of thefe boxes is an octagon, which, being nearer to a fphere, allows the bees in winter to lie in a round body near the centre of the hive; and thus a due heat is conveyed to all the exterior parts, and the honey is kept from candying. The dimensions, which he recommends, after long trial, are ten inches deep in the infide, the top-board a full inch, and the breadth within twelve or fourteen inches. He has tried boxes containing a bufhel or more, but found them not to anfwer the defign like thofe of a lefs fize. The top of the box fhould be made of an entire board, or of two boards well glued together, which fhould be a full inch thick after it has been planed, and project on all fides at leaft an inch beyond the dimensions of the box. In the middle of this top there muft be a hole five inches fquare, for a communication between the boxes; and this hole fhould be covered with a fiding fhutter of deal or elm, running eafily

easily in a groove, over the back-window. The eight pannels, nine inches deep, and three quarters of an inch thick when planed, are to be let into the top, so as to keep them in their proper places; to be secured at the corners with plates of brads, and to be cramped with wires at the bottom, in order to keep them firm. There should be a glass window behind, fixed in a frame, with a thin deal cover, two small brads hinges, and a button to fasten it: this window will serve for inspecting the state and operations of the bees. Two brads handles, one on each side, are necessary to lift up the box; these should be fixed in with two thin plates of iron, near three inches long, so as to turn up and down with the box, and put in three inches below the top-board, which is nailed down close with springs to the other parts of the box. Those who choose a frame within, to which the bees may fasten their combs, need only use a couple of deal sticks of an inch square, placed across in the box, and supported by two pins of brads; one an inch and a half below the top, the other two inches below it; by which means the combs will quickly find a stay. There must also be a passage, four or five inches long, and less than half an inch deep, for the bees to go in and out at the bottom of the box.

The boxes, thus prepared, should be kept in a house, or under a shed, the disposition and structure of which Mr. Thorley has particularly described. He also recommends to paint the apertures of the boxes, which are the habitations of the several colonies, with different colours, as red, white, blue, yellow, &c. in form of a half-moon or square, that the bees may the better know their own home. For the method of furnishing these colonies with inhabitants, see **HIVING**.

Mr. Thorley, son to the above-mentioned gentleman, has, by long experience, improved his father's method of managing bees. The bee-hive of his construction, presented to the Society of Arts, &c. is exhibited in *Plate XX. Miscellany, fig. 1*.

The bottom part, marked *a*, is an octangular bee-box, made of deal-boards, about an inch in thickness, the cover of which is externally 17 inches in diameter, but internally only $15\frac{1}{2}$, and its height 10 inches. In the middle of the cover of this octangular box is a hole, which may be opened or shut at pleasure, by means of a slider *d*. In one of the pannels is a pane of glass, covered with a wooden door *e*. The entrance *f*, at the bottom of the box, is about three and a half inches broad, and half an inch high. Two slips of deal about half an inch square, cross each other in the centre of the box, and are fastened to the pannel by means of small screws: to these slips the bees fasten their combs. In this octangular box the bees are hived, after swarming in the usual manner, and there suffered to continue till they have built their combs and filled them with honey; which may be known by opening the door, and viewing their works through the glass pane, or by the weight of the hive.

When the bee-master finds his laborious insects have filled their habitation, he is to place a common bee-hive of straw, represented at *b*, made either flat at the top, or in the common form, on the octangular box, and drawing out the slider, a communication will be opened between the box and the straw hive; in consequence of which the bees will fill this hive also with the product of their labours.

When the straw hive is well filled, the slider may be pushed in, and the hive taken away, and another placed in its room, with the slider drawn out. This new hive will also be filled in the same manner.

By proceeding in this method, Mr. Thorley assured the society, that he had taken three successive hives filled with honey and wax, from a single hive, during the same summer, and that the food still remaining in the octangular box was sufficient for the support of the bees during the winter. He adds, that if this method was pursued in every part of the kingdom, instead of the cruel method of destroying these useful insects, he is persuaded, from long experience, that wax would be collected in such plenty, that candles made with it might be sold as cheap as those of tallow are sold at present.

Mr. Thorley has also added another part to his bee-hive, which cannot fail of affording the highest entertainment to a curious and inquisitive mind. This part consists of a glass receiver, 18 inches high, eight inches in diameter at the bottom, and in the greatest part 13; this receiver has a hole at the top, about an inch in diameter, through which a square piece of deal is extended nearly to the bottom of the vessel, having two cross-bars, to which the bees fasten their combs. Into the other end of this square piece is screwed a piece of brads, which serves for a handle to the receiver or glass hive. When the bees have filled their straw hive, which must have a hole in the centre covered with a piece of tin, Mr. Thorley places the glass receiver upon the top of the straw hive, and draws out the piece of tin. The bees, now finding their habitation enlarged, pursue their labours with such alacrity, that they fill this glass hive likewise with their stores; and as this receptacle is wholly transparent, the curious observer may amuse himself with viewing the whole progress of their works. It will, however, be necessary to cover the glass with an empty hive of straw, or at least with a cloth, which may be easily removed when the bees are inspected, lest too much light prevent their working. In this way Mr. Thorley, in a good season, has had a glass filled in thirty days, containing 38 pounds of fine honey.

When the glass is completely filled, slide a tin plate between the glass and the hive or box, so as to cover the passage, and in half an hour the glass may be taken away with safety. The few bees that remain will readily go to their companions.

Mr. Thorley has added a glass window to his straw hives, in order to observe the progress of the bees; and this contrivance is useful, especially if one hive is to be removed whilst the season continues favourable for their collecting of honey; for when the combs are filled with honey, the cells are sealed up, and the bees forsake them, and reside mostly in the hives in which their works are chiefly carried on. Observing also, that the bees were apt to extend their combs through the passage of communication into the upper hive, which rendered it necessary to divide the comb when the upper hive was taken away, he puts in that passage a wire screen for netting, the meshes of which are large enough for a loaded bee to pass easily through them; and thus he prevents the junction of the combs from one box to the other, and consequently obviates the necessity of cutting them, and of spilling some honey, which running down among a crowd of bees, incommoded them much.

Mr. White, in his directions for making the bee-boxes of his invention, tells us, speaking of the construction of a single box, that it may be made of deal or any other well-seasoned boards, which are not apt to warp or split. The boards should be near an inch thick; the figure of the box square, and its height and breadth nine inches and five-eighths every way, measuring within. A box of these dimensions will contain near a peck and a half. The front part must have a door cut in the middle of the bottom edge, three inches wide, and near half an inch high. In the back part a hole must be cut

with a rabbet in it, in which is to be fixed with putty a pane of the clearest and best crown glass, about five inches long, and three broad; and let the top of the glass be placed as high as the roof within, that the upper part of the combs may be seen; and thus the state and strength of the bees may be judged better of than if the glass were fixed in the middle. The glass must be covered with a thin piece of board, as a shutter, which may be made to hang by a string, or turn upon a nail, or slide sideways between two mouldings. The glass may be made large, or another pane of glass may be fixed on the top and covered with a shutter, for the convenience of observing the bees at their work. The side of the box, which is to be joined to another box of the same form and dimensions, as it will not be exposed to the external air, may be made of a piece of slit deal not half an inch thick. This Mr. White calls the side of communication, because it is not to be wholly inclosed: a space is to be left or cut at the bottom through the whole breadth of the box, and a little more than an inch in height, and a hole or passage is to be made at the top, three inches long, and more than half an inch wide. Through these the bees are to have a communication from one box to another. In the next place a loose board is to be provided, which board is to be half an inch thick, and large enough to cover the side of communication; and likewise several little iron staples, an inch and a half long, with the two points or ends bending down more than half an inch: the use of this part of the apparatus will appear under the article *HIVING*. Moreover, let two sticks be fixed in the box transversely and crossing each other, in order to be a stay to the combs; one about three inches from the bottom, and the other at the same distance from the top; and when the hole is painted, in order to render it more durable, the box is finished. This box, says the inventor, is as plain as possible: it is little more than five square pieces of board nailed together, so that any poor cottager may make his own boxes, without the help or expence of a carpenter.

The other box must be exactly of the same form and dimensions; and the two boxes differ only in this, that the side of communication of the one must be on the right hand, and of the other on the left. The two boxes, with their openings of communication ready to be joined to each, are represented in *Plate XX. Miscellany, fig. 2.*

In *fig. 3.* is exhibited the front of a frame for twelve colonies; *a, a,* are two sills of oak, lying flat on the ground, more than four feet long: in these sills are fixed four oaken posts, about the thickness of such as are used for drying linen. The two posts *b, b,* in the front, are about six feet two inches above the sills; the other two, standing backward, five feet eight inches. You are next to nail some boards of slit deal horizontally from one of the fore-posts to the other, in order to screen the bees from the sun: let these boards be seven feet seven inches in length, and nailed to the inside of the posts, and be well-seasoned, that they may not shrink or gape in the joints: *c, c,* are two splints of deal, to keep the boards even, and to strengthen them.

Fig. 4. represents the back of the frame: *d, d, d, d,* are four strong boards of the same length with the frame, on which the boxes are to be placed; let the upper side of them be very smooth and even, that the boxes may stand true upon them, or it may be more advisable to place under every pair of boxes a smooth thin board, as long as the boxes, and about a quarter of an inch wider. The bees will soon fasten the boxes to this board in such a manner, that you may move or weigh the boxes and board together, without breaking the wax or resin, which, for many reasons, ought to be avoided.

These floors must be supported by pieces of wood or beaters, *e, e,* &c. which are nailed from post to post at each end: they are likewise to be well nailed to the frame, to keep them from sinking with the weight of the boxes: *f* represents the roof, which projects backwards about seven or eight inches beyond the boxes, to shelter them from the rain.

You have now only to cut niches or holes in the frame over-against every entrance into the boxes, as *b, b, b,* *fig. 3.* let these niches be near four inches long, and under each nail a small piece of wood for the bees to light upon. The morning or evening sun will shine upon one or both ends of the frame, let its aspect be what it will; but you may prevent its over-heating the boxes, by a loose board set up between the posts, and kept in by two or three pegs.

In order to take away part of the honey, without destroying or much disturbing the bees, Mr. White advises to examine the state of the colonies about the latter end of August through the glasses; and he observes, that such as have filled a box and a half with their works may spare the half box; but the honey-comb should be particularly examined, and about eight or nine pounds left for their winter store. When this is done, open the mouth of the box you intend to take; then, with a thin knife, cut through the resin with which the bees have joined the boxes to each other, till they are separated; and, after this, thrust a sheet of tin gently between the boxes. The communication being thus stopped, the bees in the fullest box, where most probably the queen is, will be a little disturbed; but those in the other box, where there is no queen, will be in the utmost confusion, running to and fro with a kind of mournful cry, and issuing out at the newly opened door in great disorder: however, when they have got abroad, and discover their companions, they eagerly join them at the mouth of the other box. By this means, in an hour or two, you will have a box of pure honey, without a living bee to molest you, or any dead bees to waste or damage the honey.

Mr. White's boxes are convenient for feeding poor stocks, in order to preserve them, and also for removing moths and insects from any colony that is in danger of being injured by them.

Mr. Wildman recommends the following method of taking the wax and honey, without destroying the bees: remove the hive, from which you would take the wax and honey, into a room, into which little light is admitted: invert the hive gently, placing it on any support, and cover it with an empty hive, keeping the side next the window of the empty hive raised a little, to give the bees sufficient light to find their way into it; while you hold the empty hive steadily supported on the edge of the full hive, between your side and your left arm, keep striking with your hand all round the full hive from top to bottom, in the manner of beating a drum, so that the bees may be frightened by the noise, and mount out of the full hive into the empty one. As soon as all the bees are out of the full hive, which will generally be in about five minutes, the other hive, in which they are collected, must then be placed on the stand from which the full hive was taken, in order to receive the absent bees as they return from the fields.

If this be done early in the season, the operator should examine the royal cells; for if any of them contain young bees, they, as well as all the combs that have young bees in them, must be preserved in the hive. Take out the other combs with a long, broad, and pliable knife, cutting them from the sides and crown as clear as possible, to prevent the future labour of the bees, who must lick up all the honey spilt, and remove every grain of wax. The sides of the hive should

should then be scraped with a table spoon, to clear away what was left by the knife.

Having thus taken the wax and honey, let a table, covered with a clean cloth, be placed near the stand, and giving the hive, in which the bees are, a sudden shake, striking at the same time with a considerable degree of force, the bees will be shaken on the cloth. Put their own hive upon them immediately, raised a little on one side, that the bees may the more easily enter; and when all are entered, place it on the stand as before. If the hive in which the bees are be turned uppermost, and their own hive placed over it, the bees will immediately ascend into it, especially if the lower side be struck to alarm them; for the effects of fear, impressed on the bees by the continual noise, renders them, for a considerable time, so mild and tractable, that they will bear any handling, which does not hurt them, without any signs of resentment.

Mr. Thorley objects to the method of driving bees, in order to obtain their honey, because the honey will be foul and corrupted, and great numbers of the young brood will thus be utterly destroyed, and the stocks much reduced and endangered.

Mr. Isaac, secretary to the Apian Society in the west of England, has published a small treatise, entitled "The General Apian," in which, among other things, he has described the structure of two hives, one called the "Moreton Hive," and the other the "Cottage Hive." The former is intended for a house or shed, and the latter for the open garden. The Moreton-hive is made of reed, stitched with the splits of willow or bramble; it is of a cylindrical form, twelve inches clear in diameter, and six inches high; it is best made upon a narrow hoop with whimble bit-holes in it to receive the stitches of the first list or round of reed, and a mortise-hole in the fore-part for entrance, $2\frac{1}{2}$ inches in horizontal length by $\frac{1}{4}$ th of an inch in perpendicular height: this entrance should be near $\frac{1}{4}$ th of an inch above the lower edge of the hoop, which edge should be so planed as in every part to touch a plain board. The hive, thus constructed, should be laid upon a level board, with another board upon it, which should be so thick as not to bend under a weight of 56 pounds, which should remain upon it for a day or two, till it is settled in a close state. When the hive is taken off, two of the middle lists should be cut opposite to the entrance for receiving a pane of glass, near three inches long, and as wide as the part of the two lists taken out. The ends of the lists, or coils, should be secured by stiches made with softened mole-snap wire. When the glass is fastened with putty, the stich-holes of the hoop should be filled with the same; and then a small stick should be made to pass *in* through the middle list from right to left, and *out* at the other side of the hive to serve as a support for the combs. This hive should have a set of bars cut in a round deal board, 14 inches in diameter, and $\frac{1}{2}$ an inch thick, nearly rounded to fit the hive. Of these bars there are six, and their width is $1\frac{1}{3}$ ths of an inch. The openings between them, called "streets," must be $\frac{1}{2}$ an inch wide, and extend to within an inch of the circumference of the board, which by these openings is converted into bars to support the combs. Across these bars, on the under side, it may be right to spring a small stay of wood, to keep them from dividing farther, in case the circumference should split at any time. The bars must be fastened on the top of the hive with deal pins, entering through the first into the second or third list; then a round flat top of reed, 14 inches in diameter, must be fastened to them: in this cover, and near the front of the hive, the curious may have a hole made, five inches in diameter, covered by a small board, which may

be turned off at pleasure, for placing over the hole a bell-glass, in which the bees may, in a good summer, be tempted to work. For a good swarm there should also be provided two other hives, with bars of the same sort; but without a top. On the bars of one of them the first hive should be placed, with the glasses or windows, entrances and bars, perpendicularly over each other. There should also be four hoops, of mole-snap wire, fastened about nine inches asunder, in one of the lists of the under hive, through which to pass a cord over the top hive, to keep both firmly together till the swarm is hived and placed in the bee-house. It is the cord that must keep them together. When the bees have filled the first and second, let them be raised on the third.

The "Cottage-hive" is composed of two parts; the higher part is like the common hives, but somewhat less in dimensions; 11 $\frac{1}{2}$ inches within, from the centre of the crown to the edges; the diameter at the edges is 13 $\frac{1}{4}$ inches; the entrance is horizontally two inches long, and $\frac{1}{4}$ of an inch high; opposite to the entrance, three lists above the edge or skirt is a pane of glass, like that in the Moreton-hive, and across the line of vision from the glass to the entrance, a stick is passed *in* at the right and *out* at the left. The other part is the section of a cone, 13 $\frac{1}{4}$ inches diameter in the clear, at the higher edge, and 11 $\frac{1}{2}$ inches at the lower edge, or mouth, which is formed by a hoop, like the Moreton-hive, with the first list sewed in the holes of it with willow, or bramble splits. Over the entrance is a piece of sloped deal, tacked to the hoop and front of the hive, to make it suit the front of the shed, or bee-house; but this piece should not be united to it when it is to stand in the garden. Opposite to the entrance is the window for inspection. But this part, called a "transit," because it serves as a passage between a common hive and one of Wildman's hives, wants no cross-stick to strengthen the combs, as it is two inches wider at the higher than it is at the lower edge or bottom. On the higher edge of the transit there must be fixed bars, made of a round deal board, $\frac{1}{2}$ an inch thick, and 15 $\frac{1}{2}$ inches in diameter. The bars are 6, 1 $\frac{1}{3}$ inch wide; the streets are five, half an inch wide, and there are two outside streets $\frac{1}{4}$ ths of an inch wide, or rather more. The transit, when the bars are fixed, should be pressed by the weight of half a hundred, on a smooth strong board, for a day or two, to settle it. The perpendicular height of the transit is about eight inches; and it will hold as much as the Moreton-hive. The two parts of the cottage-hive must be fastened together, like the first and second Moreton-hives, to receive the bees; and when the second parts are united, it will hold nearly seven gallons. This is called the cottage-hive, because it is the cheapest ever seen by the inventor, as it is of sufficient dimensions for the largest swarm, will admit of being easily divided and deprived, and may be reduced to accommodate a small or poor stock, by taking off the under part against winter; and by means of a good cap, hoop, and cord, it may be secured on an open stand, firmly fixed on the ground, against all the common assaults of wind and weather. Its form, being nearly that of an egg, with a part of the small end cut off, is more friendly to the bees, in respect to warmth in winter, and, therefore, better calculated for breeding in the spring than any other. It possesses all the advantages, without the inconveniences, of the large hive, recommended by the ingenious Mr. Butler, the father of the English Apianians.

See on the subject of this article, Thorley's Inquiry into the Nature, Order, and Government of Bees, 1774; White's Collateral Bee-Boxes; Wildman, &c. on Bees; Key's Ancient Bee-Master's Farewell, 1796; Isaac's General Apianian, 1803. See BEE.

HIVING.

HIVE dross, a name sometimes given to crude or rough wax. See *WAX*.

HIVING, the placing of a swarm of bees in a hive, in order to have the profit of their labours. When the swarm of bees has left an old hive, and is placed in form of a cluster hanging down from the branch of some shrub or low bush, the hiving is extremely easy, and may be done in half an hour after the time of their being still and calm in the cluster; or it may be let alone till an hour or two before sunset, provided that the sun do not shine too vehemently upon the place where they are, for that would disquiet them, and force them to rise; and, in that case they usually take a long flight before they settle again, and are very often lost; this, however, may at any time be prevented by placing an artificial screen before them, composed either of coarse cloth, or of a few branches of trees well covered with leaves.

It is commonly the branch of some shrub or tree that they settle upon, and we always find that they mean this as their settled habitation; for, however soon they are hived, the rudiments and beginnings of combs are found on it. It is true, they always leave these places, if left to themselves, in five or six days; but this is not till they find them so inconvenient that they cannot keep them, either from their being too much scorched by the sun, or exposed to winds and rain. The quantity of wax and honey left in these places, when they have quitted them, abundantly proves, however, that they had meant them for their fixed abode.

When they are placed in a hive, they very soon find themselves much better lodged than in the place they had provided for themselves; and they usually stay in it, and begin to work the next morning.

It might appear a very difficult task to get so large a number of bees into a hive, but it is much less so than it appears to be. They will often take possession of the hive of their own accord when it is hung over them; but the shortest way is to hold the hive under the branch where they are, and then sweep them down into it. This may be done with a branch of a tree with its leaves on it, or with the hand armed with a strong glove, and the face covered. But there are country fellows who will go without any sort of defence, and with their naked hand sweep them carefully off the bough into the hive, which they hold in the other hand underneath.

It is not to be expected that the whole swarm will be thus swept peaceably into the hive; many will fly away, and many clusters will fall beside the hive to the ground. All this, however, creates no difficulty; for the hive being turned bottom upwards, and set on the ground near the tree, with its edges a little raised above the surface, those bees which fell in clusters to the ground will soon crawl to their companions in the hive, and soon after, those which flew off, will descend and follow their example. If it happen, however, that some bees will obstinately keep to the place where they at first fixed themselves, the branch is to be rubbed over with the juice of such plants as the creatures hate the smell of; such are elder, rue, and some others; and if this does not succeed, there must be linen rags burnt under them, the smoke of which will soon drive them off, and make them join their companions, who find themselves more at ease in the hive.

As it is necessary to render the places disagreeable to the bees from which they are to be taken into the hive, so, many people think it very proper to prepare the hive for their reception, by scenting it with such things as they love the smell of. To this purpose they rub the inside of it with baum and bean-flowers, and daub a little honey in some parts

of it. This, however, does not seem necessary, those hives having been found to succeed full as well where it was not done, as those where it was. Reaumur's Hist. Inf. vol. x. p. 205.

Another method of getting a swarm from a branch of a high tree, is to cut off the branch with a saw, as gently and with as little disturbance to the bees as possible. In this case, when the branch is off, a man may carefully descend with it, and the bees will not quit their hold, but will be all carried where he pleases with it, and may by that means be very easily put into a hive.

Sometimes the bees, which go out in a swarm, fix upon a hole in a wall, or a hollow in the trunk of a tree, for the assembling themselves. This is a much better choice for them than the branch of a tree, but it is much worse for the person who is to hive them, for they are very difficult to be got out of these places. The common way of the country people is to attack these swarms in the middle of a cold night, and then they enlarge the opening from without, and placing the hive under it, scoop the bees out of their nest with a ladle, and put them into the hive.

Mr. Thorley tells us, that the best time to plant colonies of bees is either in March or April with new stocks, or in May or June with swarms. If swarms are used, procure, if possible, two the same day, and put them together in two boxes, or in a hive and a box; at night place them in your house, and with a knife and a little lime and hair, stop close the mouth of the hive or upper box, so that not a bee may be able to go in, or out, except at the front door. If boxes are employed, you will, in a week or ten days, see the combs appear in them; but in a hive nothing can be observed till the bees have wrought down into the box. Never plant a colony with a single swarm, as Mr. Thorley says he has sometimes done, but with little success.

When the second box, or the box under the hive, appears full of bees and combs, it is a proper time to raise the colony in the dusk of the evening, which should be done in the following manner: place your empty box, with the sliding shutter drawn back, behind the house, near the colony that is to be raised, and at nearly the height of the floor, by the help of another empty box upon the ground; then lifting up the colony with as much expedition as possible, set it down upon the empty box, with the aperture of the colony close to the piece of wood nailed upon it, so that no single bee may get out: when this is done, lift the hive and two boxes, or the three boxes, into the house again, putting them in their proper place.

Mr. Thorley farther adds, that the most effectual method of preserving bees in common hives is, incorporating or uniting two stocks into one, by the help of a peculiar fume or opiate, which will put them entirely in your power for a time, so that you may dispose of, and distribute them at pleasure. The queen, in this operation, is immediately to be searched for and detained. Hives or stocks, which have swarmed once or twice, and are consequently reduced in their number, are the fittest to be joined together, as they will be thus greatly strengthened and improved. However, if you have a stock both rich in honey and full of bees, you may take it, by dividing the bees into two parts, and putting them into two other hives instead of one. But be careful to examine, whether the stock to which you design to join the bees of another, has honey enough to maintain the bees of both; for which purpose it should be full twenty pounds in weight.

The stupifying fume used in this process is the fungus maximus or pulverulentus, or large mushroom, commonly known by the name of hunt, pucknist, or frog-cheese: it is

as big as a man's head, or bigger: when ripe, it is of a brown colour, turns to powder, and is exceeding light. Put one of these pucks into a large paper, pressing it to two-thirds or nearly half its bulk, and tying it very close; then place it in an oven some time after the household bread is drawn, and let it remain there all night; when it is dry enough to retain fire, it is fit for use in the following manner: cut off a piece of the puck as large as a hen's egg, and fix it in the end of a small stick slit for the purpose, and sharpened at the other end, and place this so that it may hang near the middle of an empty hive; this hive must be set with the mouth upward, in a pail or bucket, near the stock you intend to take: then set fire to the puck, and immediately place the flock of bees over it, tying a cloth round the hives, that no smoke may escape. In a little while you will hear the bees fall like drops of hail into the empty hive. You may then beat the top of the hive gently with your hand, to get as many out as you can: after this, loosening the cloth, lift off the hive to a table, knock it several times against the table, and several more bees will tumble out, and perhaps the queen among them; she is often one of the last that falls: if she is not there, search for her among the main body in the empty hive, spreading them for this purpose upon a table. You must proceed in the same manner with the other hive, with the bees of which these are to be united.

One of the queens being found, you must put the bees of both hives together; mingle them thoroughly, sprinkling them at the same time with a little ale and sugar, and put them among the combs of the latter hive, shaking them down in it. When they are all deposited, cover the hive with a cloth, bound close about it, and let them remain shut up all that night and the next day. Some time after this you will be sensible that they are awakened out of sleep. The second night after their union, in the dusk of the evening, gently remove the cloth from the mouth of the hive (taking care of yourself), and the bees will immediately fall forth with a great noise; but it being too late for them to take wing, they will soon return again: then inserting two pieces of tobacco-pipes to let in air, stop them close as before, and keep them thus confined for three or four days longer, after which the door may be left open.

The best time of the year for uniting them is when the young brood are all out, and before they begin to lodge in the empty cells, which they do in great numbers in cold weather and in winter. The operation should be performed early in the afternoon, that, having the greater light, the queen may be more easily found. The few bees that are left in the hive should be suffocated with sulphur.

Mr. Thorley observes, that he never knew such combined stocks conquered by robbers, and that they will either swarm the next summer, or yield a hive full of honey.

Mr. White's method of hiving a swarm into one or more of his boxes is as follows: take the loose board, mentioned under the article HIVE, and fasten it to one of the boxes, so as to stop the communication; this may be done by three of the staples there mentioned, one on the top of the box near the front, the two others on the back near the top and near the bottom; let one end of the staple be thrust into a gimblet-hole made in the box, so that the other end may go as tight as possible over the loose board, to keep it from slipping when it is handled. Be careful to fasten the shutter so close to the glass that no light may enter through it; and cover the box as soon as the bees are hived, with a linen cloth thrown loosely over it, or with green boughs to protect it from the heat of the sun. If the swarm be larger than usual, instead of fastening the loose board to one box, you may

join two boxes together with three staples, leaving the communication open from one to the other, and then hive your bees in both. In all other respects they are to be hived in boxes after the same manner as in common hives. The door of the second box should be carefully stopped up and kept constantly closed, in order that the bees may have no entrance but through the first box.

In the swarming seasons, says Mr. Isaac, hives should be in readiness for the swarms. Three iron hooks should be fastened to as many cords, tied together at such a distance from the hooks as to admit the hive between them, so that the hooks may be fastened in the sides of the hive at equal distances. The cords should be looped above the knot, so that the hive may be supported by them on a forked stick, eight or ten feet long, and pointed at the lower end. When a swarm rises, take some balm leaves and rub the inside of the hive with them, and place them on the outside under one of the cords; then by means of the long stick, wave the hive amongst the bees as they float in the air, and thrust the stick into the ground to support the hive; then walk off, and use your tinkling bell till you see them beginning to enter, at which time the noise should cease. If they are not allured into the hive by these means, they will either pitch elsewhere or go off, in which case they should be followed if possible. If they pitch on the ground, put the hive over them, and shade them with boughs of trees. If they settle on a bush, hold the hive with one hand and shake the bush with the other, just strong enough to make them fall into the hive, and put it down on the ground across a stick, with the entrance a little elevated towards the south; but if they have fixed where this mode cannot be used, the manner of hiving will be more difficult and the success less certain. Mr. Isaac says, that he has sometimes been obliged to tie several sticks together to make a long crook, and to ascend a ladder so as to hold the hive on the points of a long pitch-fork, while an assistant shook with the crook the branch of a high tree on which a swarm had fixed, and the bees seemed glad to be hived. If the bees seem uneasy in the hive, the queen is not with them, or they are determined to go off. If they return to the stock they may swarm again soon; but if they go off and you can follow them, give the old stock another hive, and look about for the queen till they have settled, and avoid treading on any bees lest you destroy the queen, or mistake the bees. If you find her, place her at the entrance, and you will thereby secure the swarm. Thorley, White, and Isaac, ubi supra. See SWARM.

HIWASSEE, in *Geography*, a river of America, which discharges itself into the Tennessee, after passing through the Cherokee town, about 40 miles below the mouth of the Clinch. N. lat. $35^{\circ} 38'$. W. long. $85^{\circ} 3'$. It is navigable till it penetrates the mountains on its S. side. These mountains, when possessed by the British, yielded ore, from which gold was extracted. A branch of the Hiwassee, called Amoia, almost interlocks a branch of the Mobile. The portage between them is short, and the road firm and level.

HLINKA, a town of Bohemia, in the circle of Chrudim; 12 miles S. of Chrudim.

HLIWINO, a town of Lithuania, in the palatinate of Minsk; 44 miles E. of Minsk.

HLUBOKI, a town of Russian Lithuania; 40 miles S.E. of Breslaw.

HLUMCZA, a town of Poland, in the palatinate of Volhynia; 60 miles N.N.W. of Zytomiers.

HO, a town of China, in Se-tchuen. N. lat. $30^{\circ} 8'$. E. long. 105° .—Also, a city of the second rank, in Chen-si. N. lat. $35^{\circ} 48'$. E. long. $102^{\circ} 34'$.—Also, a city of the

second rank, in Kiang-nan. N. lat. $31^{\circ} 42'$. E. long. $117^{\circ} 54'$.

HOA, a city of China, of the second rank, in Quang-tong. N. lat. $21^{\circ} 38'$. E. long. $109^{\circ} 49'$.

HOACHE, in *Natural History*, a name given by the Chinese to a peculiar kind of earth, which they have found very useful in the manufacture of their China-ware. It is called hoache from the word *hoa*, which signifies *soft* and *glutinous*, and is described to us as being an earth approaching to the nature of chalk, but harder, and feeling like soap to the touch. There is great reason to believe, that this is either the same earth with our soap-rock of Cornwall, or something very like it. But we are to learn, in regard to the Chinese way of using it, that it is only one of the ingredients of their fine ware, not the whole matter of which it is made.

The Chinese physicians had long used this earth as a medicine, giving it in disorders of the lungs; but it is only of late times that the workmen in porcelain attempted to use it instead of kaolin. It succeeds, however, so well, that the porcelain made of it sells dearer in the Indies than any other kind. The grain of this porcelain is remarkably fine and even, so that it is fitter for receiving the finest pencilling than any other, and it may be made surprisngly light. But there is this disadvantage, that the whole is more brittle than ordinary china, and the just degree of baking it is very difficult to hit; without which it is never strong. The Chinese sometimes make the body of their vessels of the common China-ware, and dip them when dry into a thick liquor like cream, in which the hoache is dissolved; this gives a new and beautiful coat to the vessel. They give the common varnishing over this, and it succeeds to a very great perfection.

The manner in which the Chinese use it for this purpose is this: they first wash it clean with river water, to separate a yellow sort of earth, which lies near it in the mine where they dig it, and is often brought up with it. When it is thus cleaned, they beat it to powder, and mix in it large quantities of water; they stir the mixture well, and then letting the coarser part settle, they pour off the thick liquor, and let it stand till a substance like cream subsides, which they keep moist, and use, as before mentioned, to dip the vessels in; or else they dry it, and use it with the petunse instead of the kaolin in the common manufactures.

It is said that a good porcelain-ware may be made with this earth alone without any other mixture; but the workmen themselves are unwilling to do this, and always chuse, if they do not work in the common way, to add at least two parts of the petunse to eight of the hoache, and with this mixture they make a very good ware, working it in the same manner as they do the petunse and kaolin.

The hoache, though ever so proper to supply the place of the kaolin, could not be used in the common works, because it costs three times the price, it being much scarcer, and brought much farther.

There is another very elegant sort of China-ware, which depends entirely on the hoache for its beauty; it is all white, but though the surface is perfectly smooth and polished, there are seen flowers and other ornaments on it in a very delicate manner. The method of making this is as follows: they make the vessels of the common matter of the porcelain-ware; they then dissolve, in a sufficient quantity of clear water, as much of the refined hoache as will give it the consistence of a syrup. With this they pencil out the figures they intend on the surface of the vessel while not yet quite dry; this penetrates the surface, and the lines and

strokes all appear very determinate. They let this dry thoroughly, and then cover the whole vessel with the common varnish of the porcelain.

When it has been baked the whole appears white, but the figures are very distinctly seen, and appear extremely beautiful. They are of a brighter white than any of the rest, and seem formed of a thin white vapour, running with regularity just under the surface of the vessel. They have a way of doing this with another sort of earth, which they call *chebao*; but this requires more trouble, as it must be roasted and powdered before it is fit for use. The white of this also is not so fine when done as the other. *Observ. sur les Coutumes de l'Asie*, p. 300, &c. See PORCELAIN.

HOACTLI, in *Ornithology*, a species of *Ardea*. See HERON.

HOACTZIN. See PHASIANUS *Cristatus*.

HOADLEY, BENJAMIN, in *Biography*, was born at Wellerham, in Kent, in the year 1676. He was educated in grammar learning under his father, who was a clergyman, and master of a private school in his native place, and in the year 1691 he was entered a pensioner of Catharine Hall, Cambridge. Here, in due time, he took his degrees, and became a tutor in the college, the duties of which office he discharged with great reputation. As a divine he was first settled lecturer of St. Mildred, in the Poultry, London. Here he continued ten years; during this period he held other preferment in the church, which he obtained through Dr. Sherlock, dean of St. Paul's. In 1703 he published "The Reasonableness of Conformity to the Church of England represented to the Dissenting Ministers, in answer to the tenth Chapter of Mr. Calamy's Abridgment of Mr. Baxter's History of his Life and Times." This was the occasion of a controversy between Mr. Hoadley and Mr. Calamy, which was carried on with that moderation which did credit to both parties. In 1705 Mr. Hoadley preached a sermon before the lord mayor of London, which gave offence to the high-church party, and was followed by a long controversy, in which many very eminent clergymen took a share. After it had been continued a considerable time, the house of commons addressed the queen requesting her to shew a regard for the signal services which Mr. Hoadley had rendered to the cause of civil and religious liberty, by bestowing upon him some dignity in the church. In answer to this address the queen said, that she would take a proper opportunity of complying with their desire, which, however, she never did. Though neglected by his sovereign he was not forgotten, but was presented, in 1710, by Mrs. Howland, grandmother of the duke of Bedford, to the rectory of Streatham. Of this, he says, "When fury seemed to be let loose, and to distinguish me particularly, she herself, unasked, unapplied to, without my having ever seen her, or been seen by her, chose, by presenting me to the rectory of Streatham, then just vacant, to shew, in her own expression, that she was neither ashamed, nor afraid, to give me that public mark of her regard at that critical time." Almost as soon as king George ascended the throne Mr. Hoadley was nominated one of the chaplains to his majesty, having been created doctor of divinity by archbishop Wake. This was a prelude to higher honours and a more elevated place in that church to which his learning and talents gave him a just title. In 1715 he was raised to the see of Bangor. In 1717 he preached before the king his celebrated sermon on "The Nature of the Kingdom or Church of Christ," which excited again^d him no little clamour among the clergy of the high-church party, and led to the controversy which bears the bishop's name. No sooner had this sermon been printed by special command, than it was determined

mined to proceed against the author in convocation, as soon as it should sit. The lower house drew up their representation, but before it could be brought into the upper house, that assembly was prorogued by the king's order, nor was it permitted to sit to do business till the heat of their resentment had subsided. Dr. Hoadley's sermon struck at the root of civil and ecclesiastical tyranny: he shewed, in the most decisive manner, that Christ was alone king in his own kingdom and the sole law-giver; that his kingdom is not of this world, and that consequently all encouragements and obstacles of this world were not what Christ approved, tending to make men of one profession, not of one faith; hypocrites not Christians. Another very important tract published by Dr. Hoadley in this controversy was entitled "The common Rights of Subjects defended, and the Nature of the Sacramental Test considered: in answer to Dr. Sherlock's Vindication of the Test and Corporation Acts." The argument maintained in this piece is, that it is a profanation of the holy sacrament to apply it to a purpose of a different nature from what the institutor solemnly appropriated to it, and to make that the tool of this world, which he ordered to have respect only to another: and that the test and corporation acts are repugnant to reason and to justice. In 1720 Dr. Hoadley was translated to the see of Hereford, and in 1723 he was raised to the much more valuable bishopric of Salisbury: still he employed his pen in vindicating the cause of liberty, which was ever near his heart. In 1732 he drew up a memoir of Dr. Samuel Clarke, which was prefixed to the posthumous works of that eminent divine. In the year 1734 he succeeded to the see of Winchester, and shortly after published a very useful treatise, entitled "A plain Account of the Nature and End of the Sacrament of the Lord's Supper, &c." This work, which was intended to represent one of Christ's institutions in its primitive simplicity, has been abridged by Dr. Disney, and published under the title of "The national Christian's Assistant to the worthy receiving of the Lord's Supper." Dr. Hoadley attained to the advanced age of eighty-five, when he died at his palace at Chelsea. He had ever distinguished himself by considerable learning and uncommon talents, which he consecrated in the most honourable manner to the service of mankind. He had at all times shewn himself ready to seize every opportunity to defend the cause of truth, virtue, and religion, and the principles of our excellent constitution, in whatever quarter attacked; and to assert and vindicate, on the most interesting occasions, and against the greatest names, the rights of the throne and those of Englishmen. An account of all the works of this great man may be found in the Supplement to the Biographia Britannica, to which the reader is referred.

HOADLEY, BENJAMIN, M.D. eldest son of the bishop of Winchester of that name, was born in Broad-street, on the 10th of February, 1705. He received his early education at the school of Dr. Newcome at Hackney, and was admitted a pensioner of Bene't college, Cambridge, under the worthy archbishop Herring, who was at that time tutor. He determined to pursue medicine as a profession; and he was distinguished by the progress which he made in mathematical and philosophical studies, under the celebrated blind professor Saunderson. He was created M.D. in 1728 by royal mandamus, and settled in London as a physician. He was early received into the Royal Society; and was made registrar of Hereford, while his father held that see. In 1737 he read the Gullonian lectures in the College of Physicians, which he published in 1740. It was very honourable to his character that he held, for some years, the appointment of physician to both the households, being no-

minated to that of the king in June, 1742, and to that of the prince of Wales in January, 1745, at a time when the two families were not upon the best terms with each other. He died at his house at Chelsea, on the 10th August 1757, leaving no issue, although twice married. He left the following works: the lectures, above alluded to, under the title of "Three Letters on the Organs of Respiration, read at the College, &c. To which is added an Appendix containing Remarks on some experiments of Dr. Houlston, published in the Transactions of the Royal Society for the year 1736;" 1740, 4to. This work is characterized by Haller, as a very ingenious defence of a bad cause. 2. An Harveian Oration, "Oratio Anniversaria &c," 1742, which has been esteemed an elegant piece of Latin. 3. "Observations on a Series of Electrical Experiments," by himself in conjunction with Mr. Wilson. 4. But Dr. Hoadley will be principally remembered as the author of the pleasing comedy, "The Suspicious Husband," written in 1747, which, by its own gaiety, and the admirable performance of Garrick, in the part of Ranger, became extremely popular, and it still affords fresh pleasure, whenever represented. He afterwards gave some assistance to his friend Hogarth, in the composition of his "Analysis of Beauty." Dr. Hoadley was a man of both elegant and solid accomplishments, possessed of considerable learning in his profession, and an agreeable and sprightly companion. Hutchinson Biog. Med. Gen. Biog.

HOAI-KING, in *Geography*, a city of China, of the first rank, in the province of Ho-nan, abounding with medicinal plants. N. lat. 35° 6'. E. long. 112° 34'.

HOAI-NGHAN, a city of China, of the first rank, in the province of Kiang-nan. It is situated in a marsh, and enclosed within a triple wall; the ground on which it stands being lower than the bed of the canal, the inhabitants live in a constant dread of inundation. The suburbs extend to the distance of a league on each side of the canal, and form at their extremity a kind of port on the river Hoang-ho. This place is very populous, and carries on an active and brisk trade. One of the great mandarins, who inspect the canals, and supply the court with provisions, resides here. This city has two of the second and nine of the third class, under its jurisdiction. N. lat. 53° 30'. E. long. 118° 47'.

HOAI-YU-KEOU, a town of Chinese Tartary. N. lat. 40° 54'. E. long. 117° 22'.

HOANG, HOAN-HO, or *Yellow river*, so called from the yellow colour of the mould and sand at its bottom and sides, a river of China, which has its sources in two lakes, among the mountains situated in that part of Tartary called Kokonor, about N. lat. 35°, E. long. 97°, and, after a very winding course of 2150 miles, through Tartary and China, discharges itself into the Eastern or Yellow sea, N. lat. 34° 5'. E. long. 119° 44'. It is broad but shallow, so as to be hardly navigable; it is rapid in its course, and often overflows its banks, so that it has been found necessary to raise dykes in many places on its sides, and even round many towns in the province of Ho-nan. At about seventy miles from the sea, where it is crossed by the Imperial canal, the breadth is little more than a mile, and the depth about nine or ten feet, but the velocity is about seven or eight miles in the hour. Yu, surnamed the *Great*, directed its course across the provinces of Chan-si, Chen-si, Ho-nan, and Pe-tcheli; and towards its mouth, in order to check its rapidity, he divided it into nine channels, by which it discharged itself into the sea, near the mountain of Kia-che-chan, which then formed a promontory. Since Yu, to the present time, *i. e.* in the interval of about 3950 years, the river Hoang-ho has departed so

much from its ancient course, that its mouth is at present six degrees farther south. It flowed into the sea formerly under the fortieth degree of N. lat. ; at present nearly under the thirty-fourth. Besides, the mountain Kia-che-chan, which was formerly united to the main land of Yong-ping-fou, stands at present in the sea, at the distance of 50 leagues to the S. of that city.

HOANG-TCHEOU, a city of China, of the first rank, in the province of Hou-quang, situated on the Yangtse, and having under its jurisdiction one city of the second rank, and eight cities of the third. N. lat. 38° 28'. E. long. 114° 26'.—Also, a town of Corea, in Hoan-hi, 85 miles N.W. of King-ki-tao. N. lat. 38° 42'. E. long. 125° 52'.

HOAPINSU, a small island in the Chinese sea, belonging to the group called "Lieou-Kieou." N. lat. 25° 44'. E. long. 123° 34'.

HOAR FROST, *Pruina*. See FROST.

HOARE, WILLIAM, in *Biography*, was born in the year 1707, of respectable parents, at Eye in Suffolk, and received the advantages of education in a school, at that time of high repute for classical instruction. He discovered an early disposition for painting, and gave such incontestible proofs of a natural talent for that art, at an annual prize exhibition, that, after his completion of the usual studies of the school, his father carried him to London, and placed him under the tuition of Grisoni, an Italian painter. From the skill of Grisoni the scholar could derive little profit; but it is probable, that from his conversation he imbibed that ardent desire of visiting the works of the Italian masters, which prompted him to set the example of a system afterwards pursued with so much avidity and success by most of our young students in painting. The name of William Hoare stands first on the list of those English painters who have resorted to Italy with a view to professional improvement.

Arriving at Rome, he placed himself in the school of Francisco Imperiali, and was the fellow pupil of Pompeo Battoni. During a residence of nine years in Italy, he made numerous copies of the historical works of the great masters, and he returned to England, filled with visionary hopes, and an ardent love of his profession, which did not desert him even at the latest period of an extended life.

Finding himself a stranger in London, and without the means of rendering his talents known, he accepted an invitation from some of his friends who resided at Bath, in Somersetshire, and there found such constant employment in painting portraits, that he was induced to settle in that city.

From the study of Rosalba's pictures, he added the practice of crayons to that of oil-painting, and carried it to a degree of excellence second only to the powers of that celebrated painteress.

He maintained at Bath a very high character as a portrait painter, and he enjoyed scarcely less reputation for taste and literature; and, as to these attractive qualities, he added the most unblemished integrity, his house became the continual resort of men of rank and genius. In the course of fifty years of professional attention, he portrayed most of the distinguished characters of the age.

Amidst this easy affluence, he employed the earliest moments of his leisure in the indulgence of his favourite wish of higher achievement in his art. He gave to the altar of St. Michael's church, at Bath, a figure of Our Saviour, as large as, or larger than, life; and afterwards painted for the octagon chapel, in that city, an historical composition, representing, "The Miracle at the Pool of Bethesda."

These exertions procured him commissions for a few historical pictures, the principal merit of which consists in the display of an elegant taste, and faithful study of nature.

Residing at a distance from the metropolis, where the competition of younger artists was continually accelerating the advance of English art, he retained to the last the style which he had adopted in the Italian school. His drawing was more correct than that of most of his contemporaries; but his works are deficient in the richness of colour and effect, which began generally, in his time, to prevail in the school of this country, and by which it is now so eminently distinguished.

His portraits of men were faithful resemblances of their originals, but they are seldom sufficiently divested of the formal air which was long thought requisite to the decorum of portraits. His portraits of women, particularly in crayons, have frequently much grace and softness; his most celebrated portrait in oil is a half-length of William Pitt, the first earl of Chatham.

On the formation of the Royal Academy he was elected one of the original members, and was a constant exhibitor for many years. He died at Bath in 1792.

HOARSENESS, in *Medicine*, *raucedo*, an alteration in the voice, which gives it a preternatural roughness and dissonance, and generally a lower or graver tone. The word is sometimes also applied, though incorrectly, to a diminution or loss of the voice. It is called by Sauvages Paraphonia catarrhalis. Nosol. Method. Class VI. Gen. 16.

The ancient physicians agree in referring hoarseness to a roughness in the internal surface of the trachea or windpipe; and the moderns, before the time of Sauvages, attributed that supposed roughness to the enlargement of miliary glands in the part, consequent upon the action of cold, in the same manner as the cutis asperina, or goose-skin appearance, is produced in the skin by the same agent. But that nosologist remarks, that if a German flute be wetted within, and afterwards sand thrown into it so as to roughen the internal surface of the tube, the tone is not rendered either flat or rough, as those physiologists suppose. It cannot be doubted, indeed, from what we know of the effects of inflammation in membranous parts, that this alteration of the voice arises from the thickened condition of the membrane lining the larynx, by which the diameter is altered and rendered irregular, and which, extending also to the muscles of vocality, prevents them from contracting the aperture regularly or sufficiently. In other cases, where there is both a diminution of the power of voice, and a hoarse tone, and these of considerable duration, the affection originates probably from ulceration and partial loss of substance about the larynx or glottis. In some instances, a loss of the voice seems to be dependent upon a degree of paralysis in the muscles of the larynx, by which they are disabled from opening and closing that passage. This variety of the disorder sometimes continues for months, or even years; and the voice generally returns very suddenly, even so as to alarm the patient. (Darwin's *Zoonomia*, Class III. 2. 1. 5.) A temporary hoarseness arises often from shouting or long and loud talking, by which a transient degree of inflammation appears to be produced in the larynx, and is accompanied by a sensation of soreness in the throat.

The hoarseness, accompanying a common catarrh, is, of course, the effect of exposure to cold; that which is occasioned by ulceration in the organs of the voice is commonly occasioned by the syphilitic virus, or some other chronic affection, to which the term scrofulous is sometimes applied.

The cure of hoarseness will necessarily be various accord-

ing-to the nature and origin of it; and as it is commonly only symptomatic of some other disease, will consist in removing that primary affection. When it is connected with a common cold and cough, or sore throat, it will cease with the inflammation accompanying them; but it may be much relieved by inspiring the steam of water alone, or of water and vinegar, or of water and ether. Blisters to the external fauces often relieve the catarrhal hoarseness, and sometimes also the paralytic hoarseness. In the latter variety, and in the hoarseness attendant on chronic coughs in old and feeble people, as well as in some chronic ulcerations of the mouth and throat, certain warm and stimulant gargles and linctives have been used with advantage. In such cases Dr. Cullen recommended the juice of the hedge-mustard (*Erysimum officinale*) mixed with an equal quantity of honey or sugar. When the erysimum was not at hand, Dr. Cullen substituted a syrup of horse-radish (*cochlearia armoracia*.) "I have found one drachm of the root," he observes, "fresh scraped down, was enough for four ounces of water, to be infused in a close vessel for two hours, and made into a syrup with double its weight of sugar. A tea-spoonful or two of this syrup, swallowed leisurely, or at least repeated two or three times, we have found often very successful in relieving hoarseness." Cullen *Mat. Med.*

In the complete loss of voice, Dr. Darwin recommends electric shocks to be passed through the larynx, by which two young ladies were cured in a fortnight. He likewise suggests the administration of emetics, gargles of decoction of feneka, and frequent endeavours to shout and sing,—friction externally, and sea bathing.

HOASE, in *Sea Language*, is a long flexible tube, formed of leather or tarred canvas, but chiefly of the latter, and employed to conduct the fresh water, which is hoisted aboard a ship, into the casks that are ranged in the hold; and to pass the water, or other liquors, out of one cask into the other.

HOATCHIT, in *Geography*, a country of Chinese Tartary, governed by a Mongul prince, tributary to the empire, formed into two standards; situated to the N. of Peking. N. lat. 45°.

HOATH. See HOWTH.

HOA-TSIANG, a town of Thibet; 30 miles E.S.E. of Hani. N. lat. 40° 55'. E. long. 99° 19'.

HOBAL, in *Mythology*, an idol of the ancient Arabs, the worship of which at Mecca was destroyed by Mahomet.

HO-BASCH, in *Geography*, a town of Arabia, in the province of Yemen; 44 miles E. of Zebid. N. lat. 4° 18'. E. long. 41°.

HOBBIES KEYS, a small cluster of islets, and rocks, in the Spanish Main, near the Mosquito shore. N. lat. 12° 18'. W. long. 82° 50'.

HOBBIWA, MINDERHOUT, in *Biography*, a most excellent landscape painter, born at Antwerp about the year 1611. It is not exactly known under whom he learnt the principles of his art; but that nature was his ultimate guide to the perfection he attained, is very evident in his pictures, than which none were ever painted more true.

His choice of subjects, for they generally appear to have been portraits of particular places, is exceedingly picturesque, though of a low and common kind. The border of a wood with a few scattered huts and fields visible through the trees; a narrow lane with a cottage and hedge-rows; a corn-field, and village at a short distance, in his hands, became interesting, from the skill with which he arranged the chiaro-scuro and colouring, and the brilliancy and freedom of touch whereby he gave the full character of each object, and its local place in the perspective of the picture. The forms of

his trees are purely imitated from nature, without any apparent attempts to idealize them, to give them a more compact mass in their extreme parts, as Claude, with a more exalted taste, has effected. Hobbins appears to have taken nature as he found her, and been contented with representing her truly; and he has certainly acquired the first name amongst those who have taken this line of study, which his own countrymen have generally done. Ruysdael had better selections than he, but was not so rich in colour, nor so powerful in effect. Many of his pictures are supplied with figures by Ostade, A. Vanderveelde, and other skilful masters, which gives them additional value; and they are now very highly valued and eagerly sought after.

HOBBIWA, or *Philosophy of Hobbes*, in the *History of Literature*, denotes the metaphysical, moral, religious, and political opinions of Thomas Hobbes, a celebrated English writer, who was born at Malmesbury, in Wiltshire, in the year 1588.

Having distinguished himself in early life by his genius, application, and improvement, he was taken into the service and protection of the Devonshire family, which continued, with little interruption, as long as he lived, and which gave him an opportunity of pursuing his studies, and of forming connections with persons of the first reputation for learning and science both at home and abroad.

His first work was an English translation of the "History of Thucydides," which he published with a view to the state of his country, in order to shew the fatal consequences of intestine broils.

Having acquired a thorough acquaintance with the Latin and Greek languages, he applied himself to the study of mathematics; and particularly to the works of Euclid, which he read and admired, principally on account of the clearness of his reasoning, the connection of his arguments, and the wonderful perspicuity of his method. He also devoted his leisure hours to natural philosophy, and especially to mechanics and the causes of animal motion.

In 1640 he retired to Paris, where he became acquainted with the famous Des Cartes, with whom he afterwards corresponded, and whose doctrine concerning innate ideas he strenuously opposed.

In 1642 he printed a few copies of his book "De Cive," a more complete edition of which was printed in Holland in 1647, by the care of Dr. Sorbiere. To this edition two commendatory letters are prefixed; one written by Gassendi and the other by Merfenne, with whom Mr. Hobbes was on terms of intimate friendship.

In 1650, two other treatises were published at London; one entitled "Human Nature," and another entitled "De Corpore Politico," or the Elements of Law. During this time he had been digesting his religious, political, and moral principles, into a complete system, which he entitled "Leviathan;" and which was printed in English, at London, in that and the following year. Soon after this publication he returned to England, and joined in communion with a congregation where the service of the church of England was used, and continued to resort thither.

In 1654 he published his letter upon "Liberty and Necessity," which occasioned a long controversy between him and Dr. Bramhall, afterward lord primate of Ireland. About this time he likewise began a controversy with Dr. Wallis of Oxford, which lasted as long as he lived, and in which he had the misfortune to have all the mathematicians against him. This controversy did him no credit; for though he was once and again refuted, and his mistakes were clearly pointed out, yet, such was the obstinacy of his temper, he adhered as pertinaciously as ever to his old opinions, and rendered that

a personal

a personal quarrel, which ought to have continued a literary dispute. He was no less positive and imperious in maintaining his moral, religious, and political sentiments; and he seems to have discovered, on a variety of occasions, a very unbecoming opinion of his own abilities, and a supercilious contempt for those of other men.

After the restoration, in 1660, the king settled upon him a pension of a hundred pounds a year; but notwithstanding this favour, his *Leviathan* and his treatise *De Cive* were censured by parliament in 1666, a circumstance which much alarmed him. At the same time a bill was brought into the house of commons to punish atheism and profaneness, which, it is said, induced Mr. Hobbes to write or enlarge his book concerning *Heresy*.

In 1675, he published his English edition of the *Iliad* and *Odyssey*; in 1676 his dispute with Dr. Laney, bishop of Ely, concerning Liberty and Necessity, was printed; in 1678, appeared his "*Decameron Physiologicum*," or ten Dialogues of Natural Philosophy; and about the same time a new edition of the "*Art of Rhetoric*," to which he added a Dialogue between a Philosopher and a Student of the Common Law of England; in the same year he also published his "*Behemoth*," or History of the Civil Wars from 1640 to 1660.

Mr. Hobbes retained his understanding to his last sickness; inasmuch that he was not only capable of studying mathematics when above eighty-six years old, but also of writing very long poems. It has been said, that he was afraid of apparitions and spirits; but his friends call this a fable, though they acknowledge that he was afraid of being alone, and ascribe it to a fear of being assassinated. Mr. Bayle observes, that he meditated much more than he had read, and that he never cared to collect a large library; and Mr. Hobbes says of himself, that if he had bestowed as much time on reading as other men of letters, he should have been as ignorant as they. He was a great admirer of Homer, Virgil, Thucydides, and Euclid; but he made no account of large libraries, observing that men, for the most part, following one another's steps like sheep, have seldom the courage to go out of the trodden paths and roads which are prescribed to them by their guides. Mr. Hobbes died at the house of his patron, the earl of Devonshire, in the year 1679. For a fuller account of his life and writings, the reader may consult Bayle, or the *Biographia Britannica*, article *Hobbes*.

Mr. Hobbes's religious and political sentiments are chiefly contained in his book *De Cive* and his *Leviathan*; and it is certain, that there have been few persons whose writings, by the extraordinary abilities of their author and the singularity of his notions, for the dogmatical manner in which they are delivered, and the agreeableness of their style, that have had a more pernicious influence in spreading infidelity and irreligion, though none of them are directly levelled against revealed religion.

Mr. Hobbes has been unjustly charged with atheism; for he expressly acknowledges the existence of God, and that we must necessarily arise from the effects which we behold, to the eternal power of all powers, and cause of all causes; and he blames the absurdity of those, who call the world, or the soul of the world, God: nevertheless, he denies that we know any more of him than that he exists, and seems plainly to make him corporeal; for he affirms, that that which is not body is nothing at all: "*Dantur nomina insignificantia; hujus generis est substantia incorporea.*" Religion, he says, arises from the fear of power invisible, feigned by the mind, or imagined from tales publicly allowed, as superstition arises from those that are not allowed; and he

elsewhere resolves religion into opinions of ghosts, ignorance of second causes, devotion to what men fear, and taking things casual for prognostics. He takes pains in many of his works to prove man to be a necessary agent (if these contradictory terms can be properly joined), and expressly asserts the materiality and mortality of the human soul; alleging, against the well-known maxim of Des Cartes, "I think, therefore, I am," another maxim of his own, "I think, therefore, matter can think." And he represents the doctrine concerning the distinction between soul and body in man to be an error, contracted by the contagion of the demonology of the Greeks. The belief of a future state, he says, is grounded upon other men's saying that they knew it supernaturally, or that they knew those that knew them, that knew others, that knew it supernaturally.

With regard to revealed religion, he treats the pretence to inspiration as a sign of madness; he alleges that the books of Moses, and the historical writings of the Old Testament, were not written by those whose names they bear; and that they are derived to us from no higher authority than that of Ezra. As to the books of the New Testament, he acknowledges, that they are the true registers of those things which were done and said by the prophets and apostles; but he pretends, that they were not received as of divine authority in the Christian church, till they were established by the council of Laodicea, in the year of Christ 364. Though he sometimes seems to speak with veneration of the sacred writings, and to make the laws of scripture the laws of God, yet he expressly asserts, that we have no assurance of the certainty of scripture but the authority of the church, or the authority of the commonwealth; that the precepts of scripture derive all their obligation from the will of the magistrate; and that the magistrate is the authoritative interpreter of all scripture doctrines, to whom we are bound to submit. On the same principle he maintains, that the private reason must submit to the public, *viz.* to God's lieutenant; that a subject may be allowed to deny Christ in words, provided he retains the faith of Christ in his heart, when commanded by his sovereign; and that idolatry, to which a man is compelled by the terror of death, is no idolatry.

Mr. Hobbes's opinions with regard to natural religion and civil government are equally erroneous and extravagant; he asserts, that by the law of nature every man has a right to all things, and over all persons, and that the natural condition of man is a state of war, a war of all men against all men; that every man acts reasonably, who endeavours, as far as possible, to master all the persons of others, till he sees no other power great enough to endanger him; that the civil laws are the only rules of good and evil, just and unjust, honest and dishonest, and that antecedently to such laws every action is in its own nature indifferent; that there is nothing good or evil in itself, nor any common laws constituting what is naturally just or unjust; that all things are estimated by what every man judgeth to be fit, where there is no civil government, and by the laws of society, where society is established; that the power of the sovereign is absolute, and that he is not bound by any compact with his subjects; that nothing the sovereign can do to the subject can properly be called injurious or wrong; and that the king's word is sufficient to take any thing from any subject, if there be need, and the king is judge of that need. "*Non veritas, sed auctoritas facit legem.*" And yet he elsewhere says, "*Obligatio civium erga eum qui summam habet potestatem tandem nec diutius permanere intelligitur, quam manet potentia cives protegendi.*"

Wood, in his *Athenæ Oxon.* vol. ii. p. 646, has asserted,

that Mr. Hobbes, in advanced life, retracted many of his opinions published in his *Leviathan*, &c. and composed an apology for himself and his writings; but the authenticity of this apology has been disputed. Leland's *View of the Deistical Writers*, vol. i. letter iii. Mosheim's *Ecl. Hist.* by Dr. Maclaine, vol. v.

HOBBY, was a name formerly given to strong active horses of a smaller size; they are reported to have been originally natives of Ireland, and were much liked and used. Nags answer the same description as to size, qualities, and employments.

HOBBY, in *Ornithology*, the English name of a hawk of the long-winged kind; the *falco subbuteo* of Linnæus, called by many authors, by the name *subbuteo*, the name by which others express the ring-tail and hen-harrier. See **FALCO**.

HOBBYHORSE-HEAD, in *Mining*, signifies part of the pulley gear of a coal gin, fixed over the drawing-shaft.

HOBGOBLIN is a name vulgarly applied to fairies or apparitions. Skinner calls the word *rogoblins*, and derives it from *Robin Goodfellow*, Hob being the nick-name of Robin; but Wallis and Junius, with greater probability, derive it from *hobgoblins*, *empusæ*, because they are supposed to *hop* without moving both their feet. Johnson.

HOBITS, in *Gunnery*. See **HOWITZER**.

HOBLEERS, or **HOB**ILERS, **HOBELARI**, in our *Ancient Customs*, were men who, by their tenure, were obliged to maintain a light horse or hobby, (whence their name,) for the certifying any invasion towards the sea-side.

The name was also used for certain Irish knights, who used to serve as light-horsemen upon hobbies. (18 Ed. III. stat. 1. c. 25, and stat. 5, c. 8.) The term, according to Spelman, continued till the time of Henry VIII. or that of queen Mary; when these troops were distinguished by the name of demilances and light horse. They are mentioned as part of the British army that attended king Edward II. into Scotland in the year 1322. Sometimes archers were mounted on light horses; and they were hence styled hobilier archers.

HOB-NAIL, a nail with a thick strong head, used in shoeing a hobby or little horse. Johnson.

HOB-NOB, or **HAB**-NAB, a cant word formed from *hap ne hap*, and denoting an event which happens at random or by mere chance. Johnson.

HOBOO, a name given by the people of Otaheite, and in the neighbouring islands of the South Sea, to their superfine cloth. It is the thinnest and most finished preparation of the *acouta*, which see.

HOBRECHT, **JACOB**, in *Biography*, or as the Italians write it, *Obrecht*, or *Obreth*, the most ancient composer of masses, in correct counter-point of four parts, that are come down to us. He was a Netherlander, and the musical preceptor of Erasmus, as Damon was formerly of Socrates. Glareanus, the disciple of Erasmus, says, that he had frequently heard his preceptor speak of Hobrecht as a musician who had no superior, and say, that he had such a rapid and wonderful facility in writing, that he composed an excellent mass in one night, which was very much admired by the learned. Indeed, in scoring his mass "Si Dederò," which was printed at Venice in 1508, it appears, though the movements are somewhat too similar in subject, that the counterpoint is clean, clear, and masterly. And this is the chief praise that is justly due to most of the compositions of the same period; which, in other respects, so much resemble each other, that a few specimens would exhibit almost all the variety of melody and measure which the productions of a whole century can furnish. Indeed, as air and grace were not at this time the objects of a composer's pursuits,

they should not be sought or expected. Those, however, who have heard modern melody, harmony, and modulation, to a degree of satiety, and admire the fugues, canons, and other ingenious contrivances of the sixteenth and seventeenth centuries, would have great pleasure in the performance or contemplation of such music as this, which is become *new* by excess of antiquity. Few or none of the passages have been retained in modern music; and the harmony and modulation having been regulated by the ecclesiastical tones, or modes, which have been so long exploded in this country, every thing would be as new to a *dilettante* of the present age, as if he only now heard music for the first time; so that, those who can tolerate nothing but what is *ancient*, and those, who are in constant search of *something new*, will, in these authors, find music equally adapted to their several tastes, and be likewise furnished with an excuse for their fastidiousness.

HOBROE, in *Geography*, a town of Denmark, in North Jutland, and diocese of Wiborg; 16 miles N.E. of Wiborg. N. lat. 56° 38'. E. long. 9° 49'.

HOBSON'S-CHOICE, a vulgar proverbial expression, applied to that kind of choice in which there is no alternative. It is said to be derived from the name of a carrier at Cambridge, who let out hackney horses, and obliged each customer to take in his turn, that horse which stood next the stable door. Scott.

HOBY, in *Geography*, a town of Sweden, in Sudermania; 15 miles N.W. of Nikioping.

HOCHAUS, a town of Austria; nine miles S.S.W. of Aigen.

HOCHBERG, a marquisate of Germany, annexed to the margraviate of Baden, deriving its name from an ancient castle, situated two miles N.E. from Emendingen, which is the principal town.

HOCHENAU, a town of Austria; nine miles E.N.E. of Zistersdorff.

HOCHFELDEN, a town of France, in the department of the Lower Rhine, and chief place of a canton, in the district of Saverne; 12 miles N. W. of Straßburg. The place contains 1620, and the canton 11,954 inhabitants, on a territory of 150 kilometres, in 30 communes.

HOCHLAND, **HOG**LAND, or *Highland*, an islet or rock in the middle of the gulf of Finland, of an oblong form, about 8 miles in circumference, having upon it two light-houses, and about 30 families of Finns. In the heart of the isle is a deep and gloomy vale about 100 fathoms wide. The soil of this island is generally swampy; but it is not destitute of wood, such as pines, firs, birch, alder, &c. On the highest rocks are three lakes, which are not without fish. Of domestic animals here are a few cattle and a flock or two of sheep. Of wild fowl there are various species. Seals abound and herrings are plentiful. N. lat. 60° 3'. E. long. 27°.

HOCHST, a town of Germany, situated on the Maine; 6 miles W. of Frankfurt.

HOCHSTADT, a town of Bohemia, in the circle of Böhemia; 11 miles from Turnau.

HOCHSTATT, or **HO**CHSTETT, a town of Bavaria, in the principality of Neuberg, on the Danube. Near this place was fought the famous battle of Blenheim (see **BL**ENHEIM); 19 miles N. W. of Augsburg.

HOCHSTETT, a town of the bishopric of Bamberg, on the Aisch; 13 miles S. of Bamberg. N. lat. 49° 46'. E. long. 10° 47'.

HOCHWEISH, a town of Hungary; 20 miles W.S.W. of Kremnitz.

HOCK. See **HAM**.

HOCK-Tuesday money. See HOKE-day.

HOCKHEIM, in *Geography*, a town of Germany, situated near the conflux of the Rhine and Maine; celebrated for its excellent wine; 16 miles N. of Francfort on the Maine.

HOCKHOCKING, a river of America, in the state of Ohio, about 25 miles below the Muskingum, which it resembles, though inferior to it in size. It rises near a branch of the Scioto, and pursuing a S. W. course enters the Ohio, at Bellpré, in N. lat. $38^{\circ} 57'$. It is navigable for large flat-bottomed boats, between 70 and 80 miles; and on its banks are fine meadows, seldom overflowed, and on its borders are rich upland. Its banks supply inexhaustible sources of free-stone, iron-ore, lead, and coal. Here are also productive salt-springs, with beds of white and blue clay of excellent quality. Red bole, and many other useful fossils, have been found on its banks.—Also, a post-town in Ross county, Ohio; 440 miles from Washington.

HOCKQUAR, or HOCKQUART, an island of Upper Canada, on the E. side of lake Superior.

HOCKSENBERG, a town of Prussia, in Pomerelia; 30 miles W. of Dantzic.

HOCKSTETT, a town of the bishopric of Bamberg; 12 miles S. of Bamberg.

HOCUB, in *Botany*, a name given by Vaillant to a genus of plants, called by Tournefort and other authors gundelia.

HOCUS POCUS, a cant term applied to a juggle or cheat. Dr. Tillotson derives it from the form of consecrating the sacramental bread in the Romish church, *hoc est corpus*. Junius derives it from the Welch *hocced*, a cheat, and *poke*, or *pus*, a bag; the jugglers using a bag for conveyance. The etymology, however, is uncertain. Johnson.

HOD, a sort of tray for carrying mortar, in use among bricklayers.

HODAL, in *Geography*, a sea-port town of Sweden, in West Gothland, on the coast of the North sea; 45 miles N. N. W. of Uddevalla.

HODAM, a town of Scotland, in the county of Dumfries; 10 miles E. of Dumfries.

HODDESDON, a market-town and chapelry in the parishes of Amwell and Broxbourn, in the hundred and county of Hertford, England, is situated near the river Lea; 17 miles distant from London. It consists principally of one street, and, in the year 1801, contained 227 houses, and 1227 inhabitants. The privileges of a weekly market, held on Tuesdays, and a three days annual fair, were granted by Henry VIII. The original market-house, a curious edifice of wood, supported on arches, is yet standing, and is decorated with a number of rude and grotesque figures, carved on different parts. The chapel, a neat brick building, was erected about the year 1786, on the scite of an ancient structure. Near the market-house is a conduit of good water, which is supplied by pipes from a spring at some distance; it was built by the Rawdons, a respectable family in this town; and is kept in order pursuant to the will of Marmaduke Rawdon, esq. who, in 1679, bequeathed an annual provision for that purpose. The town is possessed of an incorporated grammar-school; and in the vicinity is a large cotton-mill. Near the southern extremity of the town is a large house, which presents, both externally and internally, various specimens of curious architecture, sculpture, and carving. See Chauncy's "History, &c. of Hertfordshire," and Lysons's "Environs of London," 4to. 1811.

HODEGOS, a term purely Greek, ἡδεγος, signifying *guide*. The word is chiefly used as the title of a book composed by Anastasius the Sinate, toward the close of the fifth

century; being a method of disputing against the heretics, particularly the Acephali.

Mr. Toland has also published a dissertation under the same title. Its subject is the pillar of fire, &c., which went before the Israelites as a guide in the desert.

HODEIDA, in *Geography*, a sea-port town of Arabia, on the Red sea, with a harbour fit only for small vessels. The jurisdiction of the Dola, who is accountable only to the Imam, is confined to this city. His revenue consists in part of the duties upon coffee exported. The mansion-house of the Dola, the custom-house, and the houses of the principal merchants, are constructed of stone; the rest of the town is composed of huts built in the ordinary stile. Near the sea stands a small citadel; incapable of affording a very strong defence. This city has its patron saint Scheick "Sadik," who is honoured with due veneration. At the distance of $1\frac{1}{2}$ mile from Hodeida is a well of excellent water, which supplies the inhabitants.

HODEN, a town of Africa, in the Sahara. N. lat. $19^{\circ} 25'$. W. long. 12° .

HODENSTEIN, in *Natural History*. See ENORCHIS.

HODGE-PODGE. See HOTCH-POT.

HODGES, NATHANIEL, in *Biography*, a physician, the son of Dr. Thomas Hodges, dean of Hereford, was born at Kenington. He was educated at Westminster school, and was elected a student of Christ-church, Oxford, in 1648. He obtained the degree of M. D. in 1659, and settled in practice in London. He remained in the metropolis during the continuance of the plague in 1665, when most of the physicians, and Sydenham among the rest, retired to the country: and, with another of his brethren, he visited the infected during the whole of that terrible visitation. These two physicians, indeed, appear to have been appointed by the city of London to attend the diseased, with a stipend. Dr. Hodges was twice taken ill during the prevalence of the disease; but by the aid of timely remedies he recovered. His mode of performing his perilous duty was this: he received early every morning, at his own house, the persons who came to give reports of the sick, and convalescents, for advice; he then made his forenoon visits to the infected, causing a pan of coals to be carried before him with perfumes, and chewing troches while he was in the sick chamber. He repeated his visits in the afternoon. His chief prophylactic was a liberal use of Spanish wine, and cheerful society after the business of the day. Having thus had ample opportunities of ascertaining the phenomena of the disease, he published, in the year 1672, a work under the title of "Loimologia; five Pestis Nuperæ apud Populum Londinensem grassantis Narratio Historica," 8vo.; which contains the most authentic account of that memorable calamity. He subjoined the bills of mortality of the plague-year, 1665, amounting in all to 97,306 deaths, of which 68,596 were occasioned by the pestilence. This volume was translated into English by Dr. Quincy, and published, with some additional tracts upon the subject, in 1721, when the occurrence of the plague at Marseilles excited considerable alarm in the commercial cities throughout Europe. It is to be lamented, that a man, who had performed those dangerous duties among his fellow-citizens with so much intrepidity and fidelity, should have ultimately been so far reduced in his circumstances, as to be confined in the prison of Ludgate for debt, where he died in 1684. His body was interred in the church of St. Stephen, Walbrook, where a monument is erected to his memory. The only other work published by Dr. Hodges, was entitled "Vindiciæ Medicinæ et Medicorum," and printed in 1660, 8vo. See Gen. Biog. Hutchinson, Med. Biog.

HODGES, WILLIAM, R. A. a landscape painter, who received his tuition in the art from Wilson, whom he assisted for some time, and under whom he acquired a good eye for colouring, and great freedom and boldness of hand; but unluckily, like too many pupils, he caught the defects of his master more powerfully than his beauties; and was, in consequence, too loose in his definition of forms, by which means, that which added grace to the works of the master, became slovenliness in the pupil. "Hodges had the boldness and neglect of Wilson; but not genius enough to give authority to the former, or make us forgive the latter: too inaccurate for scene-painting, too mannered for local representation, and not sublime or comprehensive enough for poetic land-scape; yet, by mere decision of hand, nearer to excellence than mediocrity; and, perhaps, superior to some who surpassed him in perspective, or diligence of execution." He accepted an appointment to go out draughtsman with Capt. Cook on his second voyage to the South seas, from which he returned after an absence of three years, and painted some pictures for the admiralty, of scenes in Otaheite and Ulitea. Afterwards, under the patronage of Warren Hastings, he visited the East Indies, where he acquired a decent fortune. On his return home, after practising the art some time, he engaged in commercial and banking speculations; which, not proving successful, he sunk under the disappointment, and died in 1797, aged 53.

HODMAN, a cant term formerly used for a young scholar admitted from Westminster-school to be student in Christ-church, in Oxford.

HODOMETRICAL (of ἴδος, *way*, and μέτρον, *I measure*.) method of finding the longitude at sea, is that of the computation of the measure of the way of a ship between place and place, *i. e.* observing the several rhumbs or lines in which the ship sails, what way she has made, or how many leagues and parts of a league she has run. This method is liable to great errors.

HODY, HUMPHREY, in *Biography*, was born at Odcombe, in Somersetshire, in 1659, of which place his father was rector. He was educated at a grammar-school, and completed his studies at Wadham college, Oxford, where he took his degrees, and was afterwards chosen fellow and tutor. In 1681, and 1682, he wrote his learned dissertation on Aristæus's History of the Seventy-two Interpreters, which was intended to shew, that it was the invention of some Hellenistical Jew, and written on purpose to recommend and give greater authority to the Greek version of the Old Testament, which, from this story, has received the name of Septuagint. In 1689, Mr. Hody wrote the prologomena to John Malela's "Chronicle," which was published at Oxford two years afterwards. In 1692, he took his degree of D. D., and soon after published a treatise entitled "The Resurrection of the same Body asserted." After this he obtained some considerable preferment in the church, and in the beginning of the reign of queen Anne when the controversy concerning the powers and privileges of an English synod, or convocation, was warmly agitated, Dr. Hody published "A History of English Councils and Convocations, and of the Clergy sitting in Parliament, in which is also comprehended the History of Parliaments, with an Account of our ancient Laws." This work brings down the history from the first synod, which is mentioned to have been held in this island, *viz.* that of Verulam, in 446, to the beginning of the reign of Henry VIII. Dr. Hody was author of many other learned works, and left behind him, which was published in 1742, a work in MS. entitled "De Græcis illustribus Linguæ Græcæ Literarumque Humaniorum Instauratoribus, eorum Vitæ, Scriptis et Elogiis." This work consists of two books, VOL. XVIII.

of which the first treats of the learned Greeks who came to Italy before, and the second, of those who came after the taking of Constantinople. Dr. Hody died in 1706, in the 48th year of his age.

HOE, in *Agriculture*; the usual name of a tool employed in tillage husbandry, well known to the modern farmer, and which is constructed in different modes and forms, in order to serve different purposes in cultivation. Tools of this nature are principally distinguished into two kinds, from the differences in the methods in which they are made use of; as *hand* and *horse* hoes, the former sort being used by the hands of the labourer, while the latter are wholly employed by the powers of the horse. Hand-hoes are, likewise, chiefly had recourse to where the crops are put into the ground in the broad-cast, or narrow-row systems, but horse-hoes in such as are sown in distant drills in a regular manner in regard to the rows or lines. Those of the latter sort are far more powerful in their work than those of the hand kind, and capable of executing the business with much greater dispatch.

HOE, Hand. The variations in the shape and construction of this kind of hoe are numerous, but the old square hand-hoe, which is in use for a great variety of purposes, such as those of common hoeing, thinning, and setting out different crops of the turnip and other similar kinds sown in the broad-cast mode; as well as occasionally for striking out the supernumerary plants in such as are cultivated in the row or drill method, is commonly well known to the farmer. It is in general constructed of a square piece of thin iron, which has a hole and sort of socket formed in the middle, on the upper side, into which the handle is fastened; though in some instances a kind of hoop is formed, which is attached to each extremity of the square part, the middle constituting a sort of socket which receives the handle. Some consider this as forming an improvement in the tool, by admitting the mould to pass through the part which constitutes the bow.

These kinds of tools are also made of different dimensions, in order to their more ready application to different sorts of crops and grounds. The most usual sizes are those given below:

Dimensions of Hand-Hoes.

| | |
|-------------------|-------------------|
| 2 inch hand-hoes. | 8 inch hand-hoes. |
| 3 inch _____ | 9 inch _____ |
| 4 inch _____ | 10 inch _____ |
| 5 inch _____ | 12 inch _____ |

It is usual to employ the two first descriptions of hoes in the more early growth of several sorts of field-crops, such as those of the carrot and parsnip kinds, as well as occasionally for wheat and other grain crops. The four-inch size is also sometimes used for these, as well as the first hoeings of turnip crops and others of the small seed kind. Eight and nine-inch hand-hoes are more commonly made use of for the later turnip crops, and for those of the pea and bean sorts, on most kinds of soil.

The last two sizes of hand-hoes are for the most part employed for the early turnip crops, on such soils as are of a sandy or loamy quality and free from stones; and, likewise, occasionally on such as are of a stony nature.

For the purpose of thinning out such plants as stand in a very close state, in a more perfect and effectual manner than by the common hoe, in various kinds of crops, a triangular tool of this sort has been constructed and had recourse to, which is found to answer well. In it one of the points of the angles is placed in a downward direction, by which means

the workman is enabled to cut out the useless plants with a considerable degree of exactness.

And another tool of this nature, which has two cutting points for breaking up and dividing the ground, has been found very beneficial in different intentions. It is said to be in great use in Portugal, and that, from its weight and conical shape, as well as the circumstance of the handle being light and short, it executes its work to a good depth, without any unusual exertion of the person who makes use of it. It is in that country chiefly had recourse to in breaking up the strong grounds of their vineyards, which could not, it is supposed, be effected by our common hand-hoes. This hoe has, likewise, been suggested as capable of being of great utility in the digging and cultivating of ground in steep hilly and mountainous tracts, as well as in the making of compost manures of lime and earth, in the corners of fields where the plough is incapable of being made use of for the purpose; and in all steep situations where the spade cannot be employed. It is not improbable but that it may also be beneficially used in digging over the head-lands in arable fields, as well as in orchard grounds, and among plantations of trees in various cases.

However, in order to effect the work of field culture in a more perfect and expeditious manner, than by means of common hand-hoes, other improved sorts of them have been lately invented by Mr. Duckett, junior, which execute the business on several rows at the same time, and which are capable of being varied so as to suit different objects and purposes of husbandry. They have been had recourse to on such lands as are of the more light quality with very considerable success. They consist of a kind of *double and triple* hoes. By the first of the latter description three rows are capable of being finished at the same instant, the labourer who employs it advancing in the same manner as with the common hoe. Its weight, when furnished with the three heart hoes, is 7lb. 9oz. but which is capable of being wrought by even a woman who is accustomed to such labour. By this means, it is suggested, a much finer tilth is stricken into drills for receiving different kinds of seeds, and more expeditiously than by the angle of the common hoe on any line of direction; and that when one drill has been correctly opened, the others will of course be formed with accuracy.

In a second form of this improved hoe, the shares are distributed in the manner for drawing, the workman in using it moving backward; and in the intention of adding more pressure without subjecting the wrist to fatigue, the contrivance of a rope is had recourse to, which passing round the workman's waist, draws from the part where the hand would have acted.

Its weight, with two twelve-inch hoes, is 7lb. 3oz. It has another disposition of the hoes, which is mostly employed in the making of trenches in mellow fine lands, for the reception of manure in the planting of potatoes and other similar crops. These drills or trenches are formed with much expedition by striking in a line, bringing the mould up into a sort of half ridge, and then finishing it by turning and going back. Its weight, with three straight six-inch hoes, is 6lb. 11oz.

There is still an additional form of this improvement of the common hand-hoe, in which there are two outward hoes, a space being left in the middle betwixt them, by which the tool is enabled to execute its work on each side of a drill or row of any kind of crop without difficulty or danger of hurting it.

It is asserted by the inventor, that by the use of this hoe two acres of barley are capable of being hoed in the

course of a day, and that good work is made with it on wheat and oat crops.

The *double* hand-hoe is still occasionally in use in some places, and is a tool that is simple in its construction, and capable of being had recourse to with benefit on soils of the more open and light description.

HOE, Breast. This is a tool of the hoe kind that has been advised by some, as more adapted to particular uses than those of the ordinary hand sort, as for the hoeing between the rows of such grain crops as are distributed at narrow distances, as performing the work not only with more expedition, but in a more effectual manner.

HOE, Macdougals. This is a tool of the hoe description, which bears the name of its inventor or improver, and which has somewhat the form of a small light plough, being drawn by a labourer, who is attached to it by a proper contrivance before, and directed by another behind. It is a very convenient and useful implement in many instances, especially where the crops stand at considerable distances in the rows, so as to permit it to work freely. As open wheels are constantly liable to clog and fill up, it might probably be an advantage in this case to have the wheel made perfectly solid.

HOE, Horse. This is a very powerful implement of the hoe sort, which is now much in use for the cultivation of most sorts of crops, that are sown in the drill or row method.

The tools of this description that are employed in the different counties of the kingdom, are extremely various in their nature, form, and construction, according to the uses and purposes for which they are designed, as well as the peculiar states and circumstances of the lands on which they are to be employed, and the nature of the drill machines by which the crops are put into the ground. They also differ greatly in their weights and sizes, as well as in the shapes of the cutting parts or hoes.

But all the different kinds of hoes of this nature have a very great superiority and advantage over those of the hand kind when properly formed, not only in point of dispatch from their working upon a great number of rows at the same time, but from their executing the business to a better depth, and in a much more perfect manner. It is obvious, that by means of this description of hoe, the earth can be much more completely stirred and loosened about the roots of the plants, and the ground be kept far more clean and free from weeds than by the hand method, while the saving in labour and expence is very considerable. There can, therefore, be no doubt of the propriety of using them as much as possible in the business of modern husbandry.

Among the numerous implements of this kind which have been lately invented, the *expanding horse-hoe*, and *six-shared horse-hoe*, described in Mr. Amos's work on drill-husbandry, are deserving of notice, as being practical tools. The former has a superiority in many cases from the circumstance of its being formed with expanding shares, which can be regulated to such distances as may be proper within the limits of twelve and thirty inches. It is found extremely beneficial in the hoeing of bean crops, whether sown in drills or equi-distant rows. Likewise, in crops of the potatoe and cabbage kinds. The inventor has had much recourse to it for these purposes in the county of Lincoln.

The *six-shared horse-hoe* may likewise be very useful in different sorts of grain-crops, which have small intervals, such as those of nine inches, from its being capable of regulation in so far as the rows are concerned. It has also been found capable of application in the preparation and cultivation of

lands of the stiff, stony, and gravelly descriptions, as well as in such as are greatly over-run with weeds and other similar trumpery, by means of having recourse to teeth, tines, or other coulter, in the room of the triangular hoes; which should be fixed in the tool in such a manner as that they may not only cut and divide the more superficial parts of the soil, but also effectually stir it below.

A convenient horse-hoe, for the purpose of hoeing a number of rows at the same time, is capable of being furnished by the drill-machine, improved by Mr. Cook, merely by removing the drill-coulter, and supplying their places with proper shares for hoeing. But in doing this it must be observed, that soils of different qualities and textures will require shares of different forms and sizes, but which can only be regulated by means of experience in any particular sort of land. In sandy, loamy, and all light sorts of soil, or such as have been perfectly broken down and reduced by tillage, shares from five to six inches in breadth for nine-inch drills, and those of eight inches in breadth for twelve-inch drills, will perform their business in a safe and effectual manner. But in strong clays, which are intermixed with pebbles, the shares of the hoes must not have so much breadth; and it is not improbable but that there may be some soils wholly incapable of flat-hoeing. Where, however, the texture of the soil in the intervals of the rows of grain is capable of being torn and stirred by long narrow plates of iron, having the forms of points or chisels introduced into the shanks of the hoe-shares, instead of the hoe-plates, there will be very great advantage obtained in the work. The hoe-plates are capable of being regulated so as to operate to a greater or less depth by different contrivances. It is found that ground cannot lie in too level a state on the surface for the work of effectual and expeditious horse-hoeing. In cases, however, where the ridges or lands are in so convex or rounded a state, as that the whole of the hoe-plates are incapable of performing the work in an equally deep manner in the same operation; such as cannot be rendered useful may be taken out and laid by.

It is suggested by the improver of this horse-hoe, that it is capable of being applied to several other beneficial purposes, in addition to that of hoeing drilled corn crops, such as cutting up the rows of stubble as soon as the produce has been removed, with all such weeds as may have escaped the hoe, and the stirring of summer-fallows, &c. With one man, two horses, and a boy, it is said that ten acres are capable of being wrought over in the course of a day; which is a great convenience, especially in the busy harvest season, when it would be wholly impossible to spare such a number of men and horses as would be necessary to effect the business with common ploughs. The same expeditious method is also capable of affording very great advantages, in cutting up the stubbles, either before or directly after the crops have been taken away, as time may be thereby gained for a second sowing of grass-seeds where the first may have missed, and on cole, rape, and turnips, for the food of sheep or neat-cattle, during the winter or spring.

Another simple and convenient tool of this description, which has been lately employed with success, is the *drill horse-hoe*. It has been used in hoeing and cleaning drilled wheat crops with considerable advantage, in the practice of J. C. Curwen, esq., in Cumberland, who states, that "the simplicity and ease with which it is worked, has enabled him this season to give his wheat-crop, which exceeds one hundred acres, two cleanings, at an expence somewhat less than a shilling per acre each operation; a man and boy, with one horse, being able to clean above seven acres per day.

The direction of the harrow, to prevent its injuring the grain, is effected by an alteration of the chain, by which it is attached to the wheels. The distance of the other teeth from the centre tooth must be regulated by the width of the drills. In case they exceed a foot, the harrow should be broader, to admit of another row of teeth. To clean at nine inches, two inches and a half are allowed on each side of the centre tooth, by which means every part of the earth is cut between the rows of grain. The size and strength of the teeth must be regulated by the nature of the soil."

Upon the utility of this hoe, Mr. Dykes has remarked, "that its effects appeared to him most highly beneficial, in clearing away in the spring all the weeds that had grown during the winter, amongst the wheat, without the least injury to the grain; and also in raising up the top soil, which had become sad and heavy, and thus enabling the spring shoot to take root more easily; and, at the same time, it covers the roots of the corn with fresh soil, which are often left quite bare by the washing of the rains in winter, and subject to be killed by the frosts. It also enables the farmer to sow his barley much earlier than he could broad-cast, as it will both clear the corn previous to sowing the grass-seeds, and afterwards harrow them in." Indeed the advantage has appeared so great, that he has been induced to sow the corn on his fallows by means of the drill.

A practical implement of this sort has likewise been lately contrived by Mr. Waitell, which he denominates a *horse-hoe*. In this tool, by combining the powers of the hoe and harrow a convenient and useful machine is afforded for working the intervals of drilled turnip, and other crops, that have sufficient widths in the rows for admitting its action.

Its various uses are, that "it enables the farmer to cultivate those intervals as completely as a well-wrought fallow, so long as the horse can travel therein without injury to the growing crop. It is not ascertained who was the original inventor of this tool, but the first Mr. Waitell saw was at West Park, in the vicinity of Barnard Castle. That in his possession was brought from Carlisle, and great numbers have been since made from it. They answer perfectly for turnip crops, sown at twenty-seven inches distance in the rows, and are greatly in use for that sort of culture.

There are still a great many other sorts of horse-hoes, but it is not necessary to take notice of them in this place, as they will be considered in speaking of the operations which they are particularly calculated to serve.

Hoes of these several kinds may be seen by consulting the figures in the plate belonging to this article.

Hoe, in *Gardening*, the common name of an useful and well-known garden implement.

These tools are of different kinds, as *drawing* and *scuffing*, each of which has different sizes or dimensions.

The first sort is fixed with its edge inclining a little inward; the workman, in using it, drawing it towards him. It is one of the most useful implements of gardening for many purposes, both for general hoeing, and in drills for sowing many sorts of seeds, loosening the earth about the plants, and moulding up the stems of them, as well as hoeing down weeds between all sorts of plants that stand distant enough to admit it. It is the best adapted of any kind for thinning out esculent crops to proper distances, to acquire their proper growth, such as onions, carrots, parsnips, turnips, spinach, &c. And of this kind there should be three or four different sizes, from six inches width down to two inches, or less.

The first size is a large hoe for common use, about six inches long in the plate, by three or four broad, fixed on a

long handle for both hands, and is the proper sort to use for all common hoeing-work, and for drawing drills for sowing peas, beans, kidney-beans, &c. It is the most eligible sized hoe of any for broad-hoeing, between rows of all those kinds of plants, and all others that stand distant enough, either in rows or otherwise, for the hoe to pass between them, both to cut down weeds and loosen the ground, and to earth up the stems of the plants; and for all other purposes of hoeing where the plants stand distant, both in the kitchen and pleasure-garden.

The second size should be about four inches in the plate longways, and the same breadth as the above. It is useful for drawing drills, and for hoeing among various plants, where the former sort of hoe cannot be commodiously employed; as well as to thin some sorts of esculent crops that require moderate distances, such as Dutch turnips, general crops of carrots, parsnips, &c. It is also a proper sized hoe for hoeing common flower-beds and borders, &c. in most instances.

The third size should be two inches and a half, or not more than three inches broad in the plate; and be fixed on a short handle to use with one hand in small hoeing, thinning out several sorts of esculent crops, and other work among close-growing plants. A smaller one should also be fixed on a longer handle, to use two-handed in hoeing borders, and other compartments of smaller plants standing near together, both in the kitchen-ground, flower-garden, &c. This sized hoe, on a short one-handed handle, is likewise particularly useful for small-hoeing, moulding, and thinning out many kitchen-garden crops in young growth, such as onions, leeks, carrots, parsnips, spinach, &c. to cut them out to the proper distances. It is also a very convenient size for use on many other occasions of hoeing; and for drawing small drills for sowing many kinds of seeds, and hoeing up flower-beds, &c. where the larger hoes cannot be readily admitted between the plants, so as to stir the mould effectually about them.

The fourth size should be about two inches wide, and fixed in a short handle. It is proper for small-hoeing onions and small crops of carrots, radishes, &c. the first time where they stand pretty close, and where it is not designed to thin them out at once to their full distance, but to leave them rather thickish for culling, &c.

The edges of the hoes should constantly be kept sharp by occasional grinding, that they may cut clean and freely.

The second sort, or scuffling-hoe, is commonly called a *Dutch-hoe*. It is fixed with the edge outward, on the end of a long handle, so as that the person using it may push it from him going backward, and never treading on the hoe-ground, as with the drawing-hoe. In regard to size, it should be from about four to six or eight inches wide, open in the middle, for the mould and weeds to pass through, so as not to be drawn in heaps; having a long socket at the back part, in which to fix the handle, which may be five or six feet in length.

This is very proper for scuffling over any piece of ground to destroy weeds, that is clear from crops, or between crops that stand wide, with which a person may make considerably more expeditious work than with a drawing hoe, especially when the weeds are not suffered to grow large; in which case, one man can often do as much as two with the other sort. It is not proper for hoeing out crops of esculent plants, or for earthing up the stems of plants, nor for hoeing where the plants stand close. But it is very useful for cutting down weeds in shrubberies and wilderness quarters, where

the shrubs stand distant from one another. And it is the best sort of any for scuffling over sand-walks, or others made of loose materials, in order to destroy weeds, moss, &c.

When of a small size, it is also found useful to run over flower borders, to cut up straggling weeds; as, being fixed on a long handle, the work may be effected by standing in the walks, without treading on the borders or walks, and thereby doing injury.

There is also a sort of triangular hoe, which has been lately found very useful in hoeing many sorts of small crops that stand rather close.

HOEDIC, in *Geography*, a small French island in the English channel, near the coast of the department of Morbihan; about 9 miles E. of Belle-isle, and 12 S.E. from the peninsula of Quiberon; on it are a town and village of the same name, and a fort. In 1746, this island was taken by the British. N. lat. 47° 41'. E. long. 2° 46'.

HOEING, in *Agriculture*, the work of breaking down, dividing, and rendering the particles of the mould or soil fine, by the use of tools contrived for the purpose, between the rows of drilled grain crops, or those of other sorts, set in rows at still larger distances.

It is one of the most useful and important processes, where crops are sown or set in the drill or row method, and which should constantly be well attended to, and executed.

The advantages of the hoe culture are, in general, considered to be extremely numerous; it completely destroys weeds; increases the means of the plants supplying themselves with food, greatly promotes the fertility of the land; forwards the process of vegetation; and leaves the soil in a great part prepared for succeeding crops. As rain, snow, and dews are capable of being taken up with avidity by the mould of the soil, while it is preserved in a loose, porous, and open condition, though in the contrary state, or that of its being in a hard-bound, firm situation, they seldom reach much below the surface, being speedily again taken up into the atmosphere by the effects of the sun and wind, producing little or no benefit; the work of hoeing must obviously, in this point of view, be of great utility. And accordingly it is found highly efficacious on strong, stiff, loamy sorts of land; while in those of a very light open texture it is often hurtful, by suffering the moisture and other elastic matters to escape too freely, when too much employed.

In conducting the work of hoeing, the ground should be in a medium state of dryness. Light dry soils are mostly capable of being hoed at any season; but such as are of an adhesive compact quality, can only be hoed with benefit, at particular periods, when the mould of them is in a loose friable situation.

In the hoeing process, it is necessary to execute the business in different ways, according to the nature and circumstances of the land. Upon the more stiff, heavy, loamy sorts of soil, which are very apt to produce abundance of weeds, it will be found necessary to repeat it more frequently than on others of the more light and open descriptions. The hoes should likewise be heavier, and the shares stronger, for the former than the latter. In grain, and small seed crops, when drilled at narrow distances, the work of hoeing should be performed by means of small shares that bear a due proportion to the width between the rows. But for other larger sorts of crops that are drilled or set at much wider distances, larger and stronger tools are proper.

Many farmers are of opinion that hoeing is greatly more beneficial when executed with horse hoes, than any of those of the hand kind, from their loosening the soil more deeply, and

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and thereby providing more nourishment for the use of the crops. Hence, it is supposed, arises "the vast importance of the operation of horse-hoeing, during continued drought in the spring or summer; and to this cause, in a great part at least, it may probably be owing that lucern, usually sowed and horse-hoed, is said to endure drought so much better than natural grasses, and to appear green and flourishing whilst these are withered and burnt up. The almost instantaneous benefit conferred, by this operation, upon cabbages, which are root-bound from a baked soil, or upon wheat which appears yellow and sickly in the spring, is its best recommendation." These crops may, it is said, "be seen, after being worked in the rows, from a withered sickly hue, and flagging condition, turn erect, and change their colour to a deep and flourishing green within twenty-four hours. Nay, of such importance is the operation of deep and effectual hoeing held by experienced people, that a Kentish farmer has been known, in a time of great drought, to send his men with their spades into the alleys of peas, being afraid of damage from horse-work."

With regard to the number of hoeings that may be necessary for different sorts of crops under the drill system, it must of course vary greatly according to the particular circumstances of the different cases. It is usually, however, about three, four, or even five, in remarkable instances. But it is chiefly to be regulated by the disposition of the land to throw up weeds; where this is considerable, more hoeings will consequently be required, as no weeds should ever be allowed to rise.

In respect to the proper periods of hoeing, there is considerable diversity of opinion, especially as to grain crops, and those of some other kinds.

In wheat, when sown sufficiently early to admit of the work being done in the autumn, the first hoeing is advised never to be executed until the plant has acquired more than one blade, and it may be delayed till it has four or five leaves, in case that no particular occasion for it is seen, and that it be performed before the winter sets in.

The method of hoeing is differently executed in different cases. The author of the horse-hoeing husbandry recommends, that the first operation should be performed from the rows of the plants, in one bout of the machine, by which means a ridge is left in the middle of the interval, and a furrow or channel on each side of it, having the row of plants between, by which the snow and rains are caught in the winter, and much benefit thereby produced, as well as by the greatest possible surface of the soil being exposed to the influence of the atmosphere. It has been contended by the above writer, that, for the first time, the work can scarcely be done to too great a depth, or too near to the rows, provided that the plants are not injured, or rooted up, as by laying the roots almost bare in this way, and exposing them to the action of the frosts, no sort of harm is sustained by them. This is, however, a practice, the utility of which may be justly disputed, as it is more natural to suppose that benefit may be derived from the mould being stirred and laid up to the stems of the plants, than by exposure during the rigours of such seasons. And it is even admitted, that much caution is necessary in approaching the rows of plants, in performing this sort of work on very light soils. It is also suggested, as a common fault among workmen in employing the hoe plough, that they merely skim up and down the middle of the intervals between the rows without going sufficiently near them, or sufficiently deep; and it is advised, as a great improvement of the custom, to trench or draw another

furrow to a proper depth, if practicable, immediately, or otherwise before the ridge be turned back in the spring. In this way the plants are left, as it were, on the brink of a trench, by which means they are preserved constantly dry and free from stagnant moisture, being, at the same time, sheltered by the ridge thrown up in the alley.

In using the drill husbandry on strong soils, there may often be danger in protracting the first horse-hoeing to too late a period, on account of the ground being apt to become too moist for performing the business in an effectual manner.

The work of horse-hoeing in the spring may be begun "as soon as the frosts are out of the ground, and the surface mould is sufficiently firm to support the animals without injury in its execution; the ridges between the rows are now to be divided and turned back, the finely reduced mould from the action and influence of frost and snow being laid to the roots of the plants, by which an abundant supply of nutritious matter is taken up. It is not believed that even the smallest injury is done to the roots, by the breaking and tearing of the innumerable threads and filaments which branch out on every side, as nature, in a very short time, not only remedies the mischief, but provides absorbing mouths in proportion to the supply of nourishment that is made. It is suggested that the farmer must constantly be the judge of the necessity for light harrowing and rolling, before the work of spring-hoeing the rows is begun.

The number and distances of the succeeding horse-hoeings must, in a great measure, be governed by the circumstances of the land, and the convenience of the cultivator, but they have chiefly two objects in view; first, that of turning in the weeds the moment they are in the proper condition; and secondly, that of moving the surface mould before it becomes too much baked, and impervious to the dews: the latter of these points must be carefully attended to in dry parching seasons, as the weight of the crop depends greatly upon it. The advantages of the drill system are here likewise clearly evident. There may be a still further necessity for an additional stirring, in such soils as are much exhausted or impoverished, arising from the crops having taken up the chief of the nourishment which was provided by the former hoeings, consequently a new earthing up of fresh mould near the period of their coming to perfection may be of great service. It is conceived that slight hoe-ploughing can never be in the least injurious, at whatever season it may be executed; but deep working in this way should never be permitted near the rows of the plants either in the spring or the summer months. However, the middle part of wide intervals may be wrought to a good depth, as, in this case, the plants are left well earthed up at the last hoeing.

In respect to the modes of executing the work of horse-hoeing, it is hinted, that "the old method of very wide intervals for the horse-hoe, whilst the seven-inch rows upon the ridges were trusted entirely to the operation of the hand-hoe, seems now to be exploded, and to have given way to the improvement of horse-hoeing the rows in a considerable number at one time." It is probable that this expeditious method was first introduced by Ellis and Duckett. The superiority of such a practice over hand labour cannot be disputed; but when had recourse to on strong rough lands, its powers may be questioned with propriety, and a preference be justly given to the regular and effective working of the hoe-plough. Upon such clayey grounds, deep and effective pulverization is of great consequence, slight surface working producing but little benefit, the earth below being left in a hard:

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hard unreduced state, almost wholly unfit for the purposes of vegetation.

The work of horse-hoeing must, however, in a great measure, be regulated, in all cases, by the circumstances of the soils, and the particular modes of drill-sowing that may have been employed.

It is stated by a late able writer, that "early in March Mr. Coke uses the hand-hoe, which, for hoeing the rows of wheat and peas, is about six inches wide; and for hoeing those of barley, about four inches wide. By this hoe, the surface is not only turned over, and the weeds between the rows rooted up, but the mould is also accumulated about the roots of the growing corn, and covers, and consequently destroys, the low growth of poppies amongst them, which are a very frequent weed in that part of the country. A second hoeing is performed about the middle of May, and the soil is again not only cleared from weeds, but accumulated against the rising corn, each of which hoeings cost about twenty pence per acre. Nevertheless, it is suggested, that some attentive agriculturists use the horse-hoe belonging to Mr. Cook's drill machine, though the rows of corn are but nine inches from each other; and assert that this occasional trampling of the horse on the young plants is of no very ill consequence, a circumstance well worth observing, as it removes the principal disadvantage of the horse-hoe, which consists in the too great distance of the alternate rows of the corn plants." It is further stated, that "by the earth being thus accumulated against the roots of the corn, it is said to tillure, or tellure, much; that is, to throw out four or six stems, or more, around the original stem, and thus to increase the number of ears, like transplanting the roots; inasmuch that Mr. Coke obtains by this method between four and five quarters of wheat on every acre, which, in the broad-cast, did not yield more than three quarters an acre, besides saving a strike and a half of the seed corn, unnecessarily consumed in the broad-cast method of sowing. To this should be added another advantage, that as the land is thus kept clear from weeds, and has its surface twice turned over, and thus exposed to the air, it is found to save one ploughing for the purpose of a succeeding crop of turnips." But whether this tilluring of the plants may be really beneficial, without hurting their roots by too much exhaustion, has not been hitherto satisfactorily shewn.

A late writer, who objects to the process of hoeing, as practised by Tull, Chateaubieux, and others, as being very imperfect, by leaving the roots of the plants too much exposed and subject to the effects of the drying summer winds, as well as various other causes, in the first operation of the business, supposes, that all the different processes of horse-hoeing may be performed in an equally effectual manner, by the common swing-plough, as by any of the hoe-ploughs which are generally employed. The mode of using the swing-plough in this sort of work, is described and explained in the second volume of "Recreations in Agriculture," at considerable length, with a plate.

But notwithstanding the ease, convenience, neatness, and dispatch with which the work of hoeing may be executed, either by means of ploughs of the common hoe or swing descriptions in such sorts of crops as stand in need of wide intervals, as those of potatoes, cabbages, beans, and others, which are similar in their nature and habits of growth, they are not by any means properly adapted for executing the business in such crops as are put into the ground at narrow distances, such as those of the grain kind. In these cases, such hoe machines as work between many different rows at

the same time, are commonly found the most proper and convenient.

Other implements, such as those of the cultivating and scarifying kinds, may be had recourse to with much advantage, in many cases, in the early spring, in the view of loosening and stirring the earth about the roots of these sorts of crops.

It has been stated by a writer on drill husbandry, that in performing the work of hoeing in wheat crops, as that plant has two sorts of roots, namely, the *feminal* and the *coronal*, the latter of which rarely shows itself until towards the end of March, or the beginning of the following month, that is the proper period for aiding the efforts of nature; which is advised to be done by means of passing over the field with a pair of light harrows, and in this way not only destroying the weeds, but affording an earthing-up to the coronal roots of the plants. As soon as this harrowing has been executed, a roller should be immediately passed over the field, in order to render the soil firm about the roots of the crop, as well as to prepare for a second hoeing; but this process may not be necessary except in the more light kinds of soils. About the beginning of May, and sometimes sooner, it is suggested, that the second hoeing should be undertaken by the use of the six-sharred horse-hoe or the breast-hoe. The latter, however, only hoes one row at a time, and is of course very inferior to the former; which performs the work on six or seven, according to the distances at which the crops are sown. Where this last sort of hoe is employed, the feed box, &c. should be wholly removed, nothing being left but the mere frame of the drill machine, to the coulter bar of which the hoes should be attached. And in the execution of the work, the horse should pass exactly in the same track in which it went in drilling the seed, one hoe less than the number of rows drilled being made use of; that interval between the breadths of the drill implement being hoed by the hand, on account of its being unequal from the unsteadiness of the horse; and by the workman who manages the machine keeping his eye constantly on one of the hoes, so as to preserve it in the middle of the interval, the rest must with certainty be perfectly right in their direction. In cases where the labourer who directs the hoes wants to move them to the right or left, so as to keep them in the middle of the intervals, he should lift up the handles in a slight degree at the time he moves them. But it makes no material difference, whether the coulters or hoes be used or not, as the manner of regulating them is equally the same, and the directions that have been given for the use of the hoes are equally applicable to the use of the coulters in this hoe machine.

The third hoeing is directed to be had recourse to about the latter end of May, or the beginning of the following month, as at that season it greatly invigorates the coronal roots of the plants, and at the same time promotes the growth of the stems or stalks.

And where a fourth hoeing is found requisite, it should be performed about the end of June, or in the beginning of the succeeding month, according to the circumstances of the case. However, as there are considerable variations in the soils and seasons, it is suggested as impossible to ascertain with precision the exact period when the work should be performed. Consequently, much must be left to the judgment and discretion of the farmer; but weeds should in no instance be suffered to become predominant, as thereby much injury must necessarily be sustained in the crops.

When drilled crops of the wheat kind are hoed by the hand method, which should perhaps be only managed in this way; it is supposed by some that the work should be executed,

HOEING.

executed, as soon after the plants are up as possible, by two-inch hoes.

In the execution of this sort of work, on crops of the barley kind, as there are likewise two sets of roots, of a similar nature to those in wheat, as the seminal and coronal, the latter of which is formed about three weeks after the sowing of the seed, it is suggested that upon the appearance of this root, the field should be harrowed, and afterwards rolled, in order to prepare it for the first hoeing process, and that the second and third hoeings should be had recourse to at proper distances of time, being executed exactly in the same way as has been already directed for conducting the work in crops of the wheat kind.

In managing the work in oat crops, it is advised, that as soon as the coronal roots begin to show themselves, the field should be harrowed and rolled as above for the first operation of the hoe. And that the second and third hoeings, in cases where they may be requisite, should be performed in proper times afterwards, and in the same method as has been directed for crops of wheat.

It has, however, been shewn that the work of hoeing is capable of being effected in a very exact and perfect manner, without the necessity of having recourse to the use of hand hoes at all in any of these kinds of grain crops, by means of the improved horse-hoe of Mr. Cook. See HOE.

But in drilled crops of wheat as well as barley, it is the advice of many good cultivators to have the work performed as soon as any weeds make their appearance, whether the horse or hand method is had recourse to for the purpose.

And in cases of this nature, the hoes should constantly be of the same sizes with the drills, that injury may be more effectually guarded against. In these instances the work may frequently be executed by means of one horse fixed to a tool that does the business on four or five rows at the same time, a workman directing it behind by means of the handles.

In the work of horse-hoeing bean and pea crops, the writer of the same system of "Drill-husbandry" recommends, that as soon as the plants can be fully distinguished in the rows, they should be harrowed over and rolled in order to complete them for the first operation of the hoe. And that in cases where the soil is mellow in its nature, the expanding horse-hoe should be employed about the middle of May, at which time the beans or peas will be sufficiently established in the ground, so as not to be injured by the free use of the tool; the shares being kept perfectly sharp, so as to cut the weeds with facility, in order that the expanding harrow may bring them more completely to the surface, and thus finish the second process of the hoe. The crops may then remain three or four weeks, or until more weeds appear to be thrown up, when they should be skim-hoed a second time, which completes the business of the third hoeing. But in the course of some days afterwards, the rows should be hand-hoed in a perfect manner, and then well earthed up, which concludes the work of the fourth hoeing. Two or three weeks after this they should be again hand-weeded, and then earthed up the second time, which finishes the business of hoeing that is usually found necessary. It is advised, however, that if the soil should be of a stiff, gravelly, or stony nature, the hoe-plough should be had recourse to in the second hoeing, ploughing a furrow off from the beans on each side, so as to make a ridge in the intervals between the rows; by which means they will then stand upon a ridge of about six inches in width, which should be well hand-hoed. About a week afterwards, the double mould boarded plough should be employed, to earth up the plants in the rows. And in

two or three weeks they should be again hand-weeded, being earthed up a second time by the double mould boarded plough as soon as the weeds are dead, which mostly terminates the work of hoeing in such crops.

In the business of hand-hoeing crops of this sort, ten-inch hoes are commonly the most proper, the mould in the second process being brought up to the roots of the plants, upon which, especially in peas, they should be made to rest in an inclining position, so as to afford a more complete exposure to the influence of the sun and atmosphere.

In the work of hoeing drilled turnip crops, it is suggested that, as soon as they have got four vigorous rough leaves, they should be harrowed with a pair of light harrows, and in two or three weeks afterwards the second hoeing should be given, either by the breast, or six-shared horse-hoe, in order to cut up the weeds in the intervals, but such weeds as are in or near the rows should be extirpated by the hand-hoe, the turnips being thinned out at the same time. The third hoeing may be had recourse to in two or three weeks after this with the same sort of hoes, the rows being also well hand-hoed, and the turnips set out to their proper distances. And it is hinted that this method of turnip hoeing is equally applicable to the hoeing of cole, with the exception of the harrowing, which should be wholly omitted.

It is advised by many to give the first hand-hoeing in the more early turnip crops, as soon as the leaves spread about four inches each way; repeating the operation at the distance of about a fortnight, so as to leave the plants about twelve inches apart; but in the later crops, the nature and quality of the land should be well considered, and the distance regulated accordingly; however, eight or nine inches are quite sufficient in general.

In carrot crops the method of hoeing is, as soon as the plants are from two to three inches above the ground, to have them harrowed over by a number of harrows fastened together by a pole, so as to be capable of covering the ridge, the horses being made to walk in the furrows, in order to prevent treading the ground, or doing injury to the young plants. In two or three weeks after the harrowing, the second hoeing should be given to clear the intervals of weeds, such as are in or near the plants in the rows should be cut up with the hand-hoe, and the plants thinned out at the same time. The crop may remain for two or three weeks in this state, or until weeds begin again to appear. The hoes should then be again employed, the breast or horse-hoe to clean the intervals, and the hand-hoe for the rows; and where any double carrots are left, they should be taken away, and such plants as are to stand for the crop set out to their proper distances. In the execution of the work in carrot and turnip crops, the four-inch hoe is preferred by some for the latter, and the three-inch for the former, the plants being left in the first hoeing at such a distance as may seem requisite; and in the second setting them out to that of from three to five or six inches distance, according to the nature of the soil.

In the business of hoeing potatoe crops, it has been suggested that, as they are in general set upon light mellow soils, the expanding horse-hoe is well suited to their culture. It has the properties of being expeditious, effectual, and cheap in the execution of the work. The hoeing in this crop may, however, be well performed by the use of the hoe-plough, or indeed any common sowing plough, as already noticed. It is advised, that as soon as the plants are fairly above the ground, they should be harrowed once over in a place as a preparation for the first hoeing; and that in about two weeks afterwards they should be skim-hoed for the second operation, and in two or three weeks more again skim-hoed; the expanding harrow being constantly employed to drag

drag the weeds out of the ground after they have been cut up by the hoe. Directly after the second skim-hoeing they should be well hand-hoed in the rows; and as soon as the weeds are dead, and in some measure decayed, the plants in the rows should be earthed up well by the same tool properly prepared for the purpose. See HOE.

When more weeds begin to shew themselves, but before the potatoes begin to spread too much, they should be hand-weeded in the rows, and then earthed up a second time. When more weeds appear, and seem likely to run into seed before the potatoes are taken up, they ought to be pulled up by the hand, and conveyed from the field, or laid in heaps and consumed by fire, or formed into an earthy compost by means of caustic lime, and rich mould.

In the hoeing of this sort of crop others advise the use of eight or ten-inch hoes, as the land is more or less stony; in the first operation drawing up the mould so as to cover the roots and prevent their rising above the surface; afterwards earthing them up with the mould from betwixt the rows of the plants.

In hoeing cabbage crops, it is suggested, that as the month of May is the principal season for planting them to stand the winter, the work should be finished at that time; and that in about three or four weeks after they have been planted out, the hoe-plough should be had recourse to, ploughing off a furrow from the rows of cabbages on each side, so as to form a sort of ridge in the intervals; the cabbages being left upon a flat ridge of six or eight inches in breadth. These ridges should be well hand-hoed, and the mould brought up well to the plants at the same time. When the work of hand-hoeing has been completed, the expanding harrow may be made use of in order to harrow the ridges in the intervals, by which the weeds are destroyed, and left upon the surface to decay.

Ten or twelve days after this harrowing has been done, the hoe-plough may again be had recourse to, in order to turn back the mould to the roots of the cabbage plants, on each side of the rows: and in about a fortnight after this earthing up, the bottoms of the intervals should be cleared up by the horse-hoe or the hoe-plough, which has not only a very pleasing effect, but is highly useful to the crop. It should likewise be repeated a second time when the weeds begin to shew themselves, before the cabbages spread so as to prevent the horse from passing in the intervals without injury. Where additional weeds are thrown up, they may be removed by hand labour, and any injurious insects that may be present at the same time destroyed. The hoe-plough, or common swing-plough, answers here perfectly for the purpose of hoeing.

Where the hand mode is had recourse to in executing the work of hoeing, a three-inch hoe is commonly first employed, and in the course of the fortnight or three weeks afterwards a four-inch hoe; after that the plants being usually drawn out, and planted so as to give the most suitable distances according to the condition of the soil.

Although both the hand and horse method of hoeing crops must frequently become necessary, it is evident that the latter has considerable superiority in point of cheapness, convenience, and the effectual manner of executing the work. See the culture of the different grain, root, and other crops, under their proper heads.

HOEING, in *Gardening*, a necessary operation performed by the hoe, to destroy weeds, loosen the soil, and mould up the stalks or stems of plants of different kinds, and thereby promote their growth.

It is an expeditious method of destroying weeds between

all sorts of plants that stand distant enough to admit it in the intervals and rows.

When principally designed to destroy weeds, it should always be performed to some depth, and in dry weather, the more sunny the better, especially when the weeds are not to be raked off, that they may die as soon as they are cut down, or at least be so much flagg'd or withered by the sun and air as not to grow again.

This sort of work, besides destroying weeds, is likewise useful in loosening the surface and disposing the earth to receive the greater benefit from the air, dews, rains, &c. to the great nourishment of all sorts of plants, and, by breaking up the surface, dividing the clods, and stirring the earth, keeping it fresh and proving a very beneficial culture to all vegetables. In soils apt to bind after much wet, which causes the plants to appear of a stunted growth, hoeing is of vast advantage in promoting their immediate growth and future progress.

The application of earth about the stems of plants, such as earthing up rows of peas, beans, kidney-beans, cabbages, cauliflowers, &c. is constantly of great service in protecting the strength and vigour of the crops, as well as in giving them a neat appearance.

It is also beneficial in thinning out many close-standing crops to proper distances, cutting out the super-abundant plants and the weeds, and loosening the soil in an advantageous manner. See the particular crops.

HOEI-TCHEOU, in *Geography*, the most southern city of the province of Kiang-nan, in China. It is one of the richest cities in the empire: the people are economical and temperate, but they are active and enterprising in trade. Their tea, varnish, and engravings, are the most esteemed in China. It has six cities of the third class dependent upon it; and the mountains which surround this canton contain gold, silver, and copper mines. N. lat. 29° 57'. E. long. 118° 14'.—Also, a city of China, of the first rank, in Quang-tong, celebrated for the fertility of the country round it, and its extensive trade. Its jurisdiction comprehends 11 cities of the second and third class. N. lat. 23° 1'. E. long. 114°.

HOEMAH, a town on the S. coast of the island of Bourro. S. lat. 3° 50'. E. long. 127° 22'.

HOENFURST, a town of Prussia, in the circle of Nantangen; 26 miles S. of Brandenburg.

HOENSEE, a town of Prussia, in the circle of Samland; 12 miles E.S.E. of Goldap.

HOEREA, a town of European Turkey, in the Morea; 27 miles N.W. of Mistra.

HOEROMSK, a town of Norway, in the diocese of Aggerhuus; 16 miles S.S.W. of Christiania.

HOESSERING, a town of Westphalia, in the principality of Lunenburg-Zelle, situated on the Hardan; 22 miles N.E. of Zelle.

HOET, GERARD, in *Biography*, born at Bommel in 1648, and was a disciple of Warnard van Ryfen, an excellent painter, who had been bred in the school of Poelemburg; but his genius soon exerted itself in such a manner, that he was enabled to proceed happily in his profession, without being indebted to any instructor.

When he commenced artist, he was at first invited to Cleve, where his paintings procured him very great credit; but he was afterwards prevailed on to visit France: yet in that kingdom he had not the good fortune to meet with encouragement in any degree proportioned to his merit; and therefore he turned his attention to England, whither he certainly would have directed his course, had he not been dissuaded by Voisterman, who at that time was preparing to

leave

leave the court of London. At last he settled at Utrecht, and in that city and its neighbourhood found a sufficient number of admirers and friends who constantly employed his pencil; and afforded him continual opportunities to display his abilities, in executing several grand and beautiful designs for ceilings, saloons, and superb apartments, and also in finishing a great number of easel pictures for their cabinets.

The reputation of Hoet, for knowledge and skill in his profession, was so universally established at Utrecht, that he was appointed director of an academy for drawing and painting, which he conducted with great honour to himself, and remarkable advantage to his pupils. He had a lively imagination, a very ready invention, and a fine genius for composition; as also a nice adherence to the costume. His manner of painting was clean and neat, and he was thoroughly master of the true principles of the chiaro-scuro. His figures in general are designed with elegance, and drawn with correctness; his colouring is lively, natural, and full of harmony, from the judicious opposition of his light and shadow; his touch is light and firm, and his pictures have a great deal of transparency. His small easel paintings are exceedingly delicate in the touch and the finishing; and yet his larger works are always pencilled with a freedom that is suitable to those grander compositions.

Many capital pictures of this master are in the palace of Slangenberg; and his eminent talents may be seen in the grand stair-case at Voort, the seat of the earl of Albemarle. In Holland, and also in our kingdoms, several charming pictures of Hoet are preserved; some of them in the manner of Poelenburg, and others in the style of Carel du Jardin. He died in 1733, aged 85.

HOEF, or HOEFF, in *Geography*, formerly imperial, a town of Germany, in the principality of Culmbach, on the Saale, by which it is divided into the Old and New Town. It has three fauxbourgs, four churches, an academy, and a woollen manufacture. In its environs are quarries of marble, red, black, and grey, some of the latter being marked with red spots like blood; 46 miles N.E. of Bamberg. N. lat. 50° 18'. E. long. 12° 30'.—Also, a town of Norway, in the diocese of Aggerhuus; 36 miles N. of Berga.

HOFF, a town of Moravia, in the circle of Olmutz; 18 miles N.E. of Olmutz. N. lat. 49° 46'. E. long. 17° 27'.—Also, a town of Prussia, in the province of Natangen; four miles S. of Landiberg.

HOFFHEIN, a town of the duchy of Wurzburg; 36 miles N.E. of Wurzburg.

HOFFKIRCHEN, a town of Austria; 10 miles S. of Aigen.

HOFFLITZ, a town of Bohemia, in the circle of Leitmeritz; five miles S.E. of Tetschen.

HOFFMAN, in *Biography*, an excellent composer of instrumental music, particularly symphonies, was maestro di cappella in the cathedral of St. Stephen at Vienna in 1772, and a master much esteemed at that time in the imperial capital.

HOFFMANISTS, in *Ecclesiastical History*, denote those who espoused the sentiments of Daniel Hoffmann, professor of the university of Helmitadt, who, from the year 1598, maintained that philosophy was a mortal enemy to religion; and that what was true in philosophy was false in theology. These absurd and pernicious tenets occasioned a warm and extensive controversy; at length Hoffmann was compelled by Julius, duke of Brunswick, to retract his invectives against philosophy, and to acknowledge, in the most open manner, the harmony and union of sound philosophy with true and genuine theology.

HOFFMANN, GASPAR, a physician of some eminence

about the beginning of the seventeenth century, was a native of Gotha, in Thuringia, where he was born in November, 1572. By the assistance of a friend he was supported during his residence at the most celebrated universities of those times, and graduated at Basle in the year 1605. In 1607, he was appointed professor of the theory of medicine at Altdorf, the duties of which, and of other professorships, he continued to fulfil, with credit and reputation, until his death, which occurred in November, 1648. Gaspar Hoffmann was generally considered by his contemporaries as a man of great erudition, and was author of numerous publications, in which he shewed a bigotted attachment to the doctrines of the ancients, especially of Aristotle. His works are not sufficiently interesting, however, at present to require an enumeration of their titles. Haller considered much of his display of knowledge as spurious; and affirms that, as he wrote upon anatomical subjects without having touched a knife, so he treated copiously on the practice of physic, without having visited the sick. Eloy. Dict. Hist. Haller Bibl. Med. Pract.

HOFFMANN, MAURICE, a physician, anatomist, and botanist, was born at Furfstewald, a small town in the Middle Mark of Brandenburg, in September, 1622. During his early youth, his native country was desolated by war and pestilence, which compelled his parents to fly from place to place, and interrupted the education of Maurice, whose acquirements did not go beyond the art of writing. Having lost his father and mother at the age of sixteen, his ardour for knowledge led him to Altdorf, in 1638, where a maternal uncle was professor of medicine. Here he made a most rapid progress in philosophy and the learned languages, and commenced the study of physic. In 1641 he repaired to the then celebrated university of Padua, where he was particularly devoted to the study of anatomy and botany. In the former of these sciences he is entitled to the name of a discoverer, if the relation of Bartholin be true; that, while yet a student, he was amusing himself with the dissection of a turkey, and discovered the pancreatic duct, which he shewed to the anatomist Wirsung, with whom he lodged at Padua, and who afterwards found it in the human subject, and gave it his own name. After a residence of three years in Italy, Hoffmann returned to Altdorf, where he received the doctor's cap in April, 1645, and was soon appointed to a professorship; for in the year 1648 he obtained the extraordinary chair of anatomy and surgery; and in the following year he succeeded Gaspar Hoffmann as ordinary professor of these departments. He likewise was appointed successor to Lewis Jungerman, in the botanical chair, in 1653. He urged the strongest suggestions relative to the necessity of a garden for the culture and demonstration of plants, and was not less strenuous in his representations in favour of the establishment of a laboratory and an anatomical theatre: and it was to his exertions that the university was indebted for these valuable acquisitions. In addition to his academical occupations, he pursued the practice of medicine with considerable assiduity; and he obtained such eminence as a practitioner, that several of the German princes honoured him with the title of their physician. In a word, his industry in the closet, his skill and humanity at the bed-side of the sick, his eloquence in the chair, and his various social qualities, rendered him worthy of the general estimation in which he was held. He died of apoplexy, on the 20th of April, 1698, in the sixty-seventh year of his age. He had been three times married, and had eighteen children.

Maurice Hoffmann wrote several dissertations on anatomical topics, but his principal works were botanical. On this subject he published "*Floræ Altdorfensæ Deliciæ Hortenses*,"

tenfes," 1660, or a catalogue of the plants in the botanical garden; to which several appendices were afterwards printed, containing the additional plants, which were introduced in subsequent years. He likewise printed "*Floræ Altdorffinæ Deliciæ Sylvestres*," 1660, being a catalogue of the wild plants, growing spontaneously in the neighbourhood of Altdorf: and "*Descriptio Montis Mauriti in agro Leimbürgenfium, &c.*" 1694, being a catalogue of the plants of Mount Maurice and the adjacent countries. Eloy. Dict.

HOFFMANN, JOHN MAURICE, son of the preceding, was born at Altdorf, in October, 1653. He acquired a knowledge of the learned languages at Herfpruck, and studied medicine and philosophy under his father, and subsequently at Frankfort upon the Oder, and at Padua. After a residence of two years in the last mentioned university, he made the tour of Italy, and returned to his native city, where he was admitted to the degree of M. D. in 1675. His talents and acquirements obtained for him successively the highest honours and offices in the faculty at Altdorf. He began with the professorship extraordinary of anatomy, to which he was appointed in 1677, and in 1681 he became ordinary professor of the same branch. In the following year, the professorship of chemistry was given to him, and he read several courses in the laboratory, with which his father's solicitations had enriched the university. He afterwards undertook the professorship of botany. In 1709, he resigned the anatomical chair, and confined himself to the professorship of the practice of medicine, which he retained as long as he remained at Altdorf. But Hoffmann was not more distinguished by the able performance of his academic duties, than by the success of his practice; so that he was sought for by persons of the highest rank, and especially by the princes of the house of Anspach. He was appointed physician to the marquis of Anspach in 1695, and accompanied him in a journey to Italy; and after the death of this patron, in 1703, he found the same kindness from his successor, who pressed him earnestly to remove to Anspach. But it was not until the year 1713, that Hoffmann could be prevailed upon to quit his academic duties: in that year he fixed himself at Anspach, where he died in October, 1727, at the age of seventy-four. He left several works of repute: viz. two dissertations on anatomy and physiology; one on what has since been called morbid anatomy, entitled "*Difquisitio corporis humani Anatomico-Pathologica*;" *ibid.* 1713. "*Acta Laboratorii chemici Altdorffini*," 1719. "*Syntagma Pathologico-therapeuticum*," 1728, in two vols. 4to. and "*Sciagraphia Institutionum Medicarum*," a posthumous publication. He also continued his father's "*Floræ Altdorffinæ*." See Hutchinson Biographia Medica. Eloy. Dict. Hist. de la Médecine.

HOFFMANN, FREDERIC, the most eminent physician of his name, was born at Halle, in Saxony, on the 19th of February, 1660. He received his early education in his native town, and had made great progress in philosophy and the mathematics, when, at the age of fifteen, he lost his father and mother during the prevalence of an epidemic disease. In 1679 he commenced the study of medicine at Jena, and in the following year attended the chemical lectures of Gaspar Cramer, at Erfurth; and, on his return to Jena, received the degree of M. D. in February 1681. In the year 1682 he published an excellent tract "*De Cinnabari Antimonii*," which gained him great applause, and a crowd of pupils to a course of chemical lectures, which he delivered there. At the conclusion of this course, he was induced to visit Minden, in Westphalia, on the invitation of a relation, and practised his profession there for two years with considerable success. He then travelled into Holland and thence to

England, where he was received with distinction by men of science, and particularly by Paul Herman, the botanist in the former, and Robert Boyle in the latter. On his return to Minden, in 1685, he was made physician to the garrison there, and in the following year was honoured by Frederic William, elector of Brandenburg, with the appointments of physician to his own person, and to the whole principality of Minden. Nevertheless he quitted that city in 1688, in consequence of an invitation, which his rising reputation procured him, to settle at Halberstadt, in Lower Saxony, as public physician. His fame continued to extend, and he published a treatise "*De insuffientia acidi et visceri*," by which he overthrew the system of Cornelius Bontekæ. In 1689 he married the only daughter of Andrew Herfel, an eminent apothecary, with whom he had lived forty-eight years in perfect union, when she died. About this time, Frederic III., afterwards first king of Prussia, founded the university of Halle; and in 1693 Hoffmann was appointed primary professor of medicine, and composed the statutes of that institution. As a colleague in the medical professorship he recommended the celebrated Stahl, who proved the great rival of his fame as a teacher. He was most active in the exercise of his professional duties; and while he introduced a spirit of free and enlarged inquiry into the new university, he extended its fame and elevated its character, by the eloquence and profound information displayed in his lectures. At the same time his own reputation was spread abroad by the learned works which he published, and procured him admission into the scientific societies at Berlin, Petersburg, and London; as well as the honour of being consulted by persons of the highest rank. He was called upon to visit many of the German courts in his capacity of physician, and received honours from several princes; from whom some say that he received ample remuneration in proportion to the rank of his patients; while others have asserted that he took no fees, but contented himself with his stipends. Haller asserts that he acquired great wealth by various chemical nostrums which he vended. In 1704 he accompanied some of the Prussian ministers to the Caroline warm baths in Bohemia, on which occasion he examined their nature, and published a dissertation concerning them. On subsequent visits, he became acquainted with the Sedlitz purging waters, which he first introduced to public notice, having published a treatise on them in 1717: and he afterwards extended his enquiries to the other mineral waters of Germany. Among other illustrious patients, who applied to him in these excursions, were the emperor Charles VI. and his empress. In the year 1708, he was called to Berlin to take care of the declining health of Frederic, and was honoured with the titles of archiater and aulic counsellor, together with a liberal salary. After three years residence at this court he returned to Halle, and gladly resumed his academical functions. He continued also to labour in the composition of his writings; and in 1718, at the age of 60, he began the publication of his "*Medicina Rationalis Systematica*," which was received with great applause by the faculty in various parts of Europe, and the completion of which occupied him nearly twenty years. He likewise published two volumes of "*Consultations*," in which he distributed into three "*centuries*," the most remarkable cases which had occurred to him; and also "*Observationum Physico-Chemicarum selectionem Libri tres*," 1722. In 1727 he attended the prince of Schwartzemberg through a dangerous disease; in recompence for which his noble patient created him count palatine. He quitted Halle in 1734, in order to pay a short visit to his daughter and son-in-law at Berlin, which, however, was made longer than he intended; for he was detained five months by the king of

Prussia, Frederic William, in order to attend him during a dangerous illness, which had attacked him in his camp on the Rhine. During this attendance Hoffmann is said, by dignified remonstrance, to have secured himself against the brutal rudeness with which the monarch treated his other physicians; and he was ultimately treated with great honour, being elevated to the rank of privy counsellor, and presented with a portrait of the king, set in diamonds. His majesty likewise procured the portrait of Hoffmann, from the same painter, which was placed in the palace of Monbijou: and to Hoffmann's only son he presented a professorship of medicine in the university of Halle, with the title of his consulting physician. Hoffmann declined a pressing invitation to settle at Berlin, on account of his advanced age, and returned to Halle in April 1735. The illness and death of his beloved wife, in 1737, turned his thoughts to the consolations of religion, and he drew up in Latin a summary of Christian doctrine, which, at the king's desire, was translated into German. He continued to perform his academical duties until the year 1742, when he died in the month of November, aged eighty-two.

Frederick Hoffmann was an industrious and copious writer. Haller has occupied thirty-eight quarto pages in the enumeration of his works in detail. The principal of these were collected, during the life of the author, by two Genevese booksellers, and published with his approbation, and with a preface from his pen, in 1740, in six volumes folio. It was re-printed by the same booksellers, the freres de Tournes, in 1748; and in the following year, having raked together every thing which his pen had touched, they published a supplement in three additional volumes folio, which was also re-printed in 1753-4. The writings of Hoffmann contain a great mass of practical matter of considerable value, partly compiled from preceding writers, and partly the result of his own observation; but they contain also many trifling remarks, and not a little hypothetical conjecture, which was indeed a common fault of the times; and in the detail there is considerable prolixity and repetition. As a theorist his suggestions were of great value, and contributed to introduce that revolution in the science of pathology, which subsequent observation has extended and confirmed. His doctrine of *atony* and *spasm* in the living solid, by which he referred all internal disorders to some "preternatural affection of the nervous system," rather than to the morbid derangements and qualities of the fluids, first turned the attention of physicians from the mere mechanical and chemical operations of the animal body to those of the primary moving powers of the living system. To Hoffmann Dr. Cullen acknowledges the obligations we are under for having first put us into the proper train of investigation; although he himself did not apply his fundamental doctrine so extensively as he might have done, and every where mixed with it a humoral pathology as incorrect and hypothetical as any other. Hoffmann pursued the study of practical chemistry with considerable ardour, and improved the department of pharmacy, by the addition of some mineral preparations; but, on the whole, and especially in his latter years, his practice was cautious and even inert, and he trusted much to vegetable simples. See Eloy. Dict. Hist. Vit. Fr. Hoffmann à J. H. Schultze, and his Epist. to the king of Prussia, both prefixed to the Geneva edition of his works. Gen. Biography. Preface to Cullen's First Lines.

HOFFMANNIA, in *Botany*, so called by Swartz, in honour of several able German botanists of the name of Hoffmann. Mauritius, and his son John George Henry, were successively professors at Altdorf. The former died in 1698, the latter in 1727. They published catalogues of the Altdorf garden,

and of the wild plants of that neighbourhood. Frederick Hoffmann, professor at Halle, who died in 1742, aged 82, published various medico-botanical dissertations on Sugar, Cloves, Balm of Peru, Yarrow, Manna, &c. and in one of them recommended the leaves of *Veronica officinalis*, as preferable to the tea of China; a doctrine which has made as little progress in the world, as some others better founded in truth. Professor George Francis Hoffmann of Göttingen is particularly distinguished by his descriptive work on *Salices*, and his splendid *Plante Lichenosæ*, both in folio; and has also favoured the world with several other botanical writings. He was born in 1760, and is one of the most eminent cryptogamic botanists of the present day.—Swartz. Prodr. 2. Ind. Occ. v. 1. 241. t. 5. Schreb. 788. Willd. Sp. Pl. v. 1. 613. Mart. Mill. Dict. v. 2. Class and order, *Tetrandria Monogynia*. Nat. Ord. *Stellatae*, Linn. *Rubiaceæ*, Juss.

Gen. Ch. *Cal.* Perianth superior, small, of one leaf, with four erect acute teeth. *Cor.* of one petal, salver-shaped; tube extremely short; limb in four deep, lanceolate, spreading segments. *Stam.* Filaments none; anthers four, attached to the base of the tube, linear awl-shaped, erect, pressed close to the style. *Pist.* Germen inferior, oblong, quadrangular; style awl-shaped, the length of the stamens; stigma obtuse, downy, scarcely notched. *Peric.* Capsule oblong, bluntly quadrangular, pulpy, crowned with the calyx, of two cells and two valves. *Seeds* numerous, roundish, affixed to an ovate distinct receptacle in each cell.

Ess. Ch. Calyx four-toothed. Corolla salver-shaped, in four deep segments. Filaments none; capsule pulpy, with two cells, two valves, and many seeds affixed to distinct ovate receptacles.

Obs. The receptacles, as described by Dr. Swartz, evince the propriety of terming this fruit a pulpy capsule, and not a berry, the latter properly requiring the seeds to be imbedded in pulp, without any distinct receptacles, much less valves.

1. *H. pedunculata*. Sw. Ind. Occ. v. 1. 242. The only species. Found by Swartz in rather moist shady places on the high mountains of Jamaica. The stem is herbaceous, two or three feet long, branched, smooth, rather shrubby at the base; its branches round and hairy. Leaves stalked, opposite, crossing each other in pairs, ovate, pointed, entire; wedge-shaped at the base; above ribbed, shining, rough with elevated points; veiny, pale and hairy beneath. *Stipulas* opposite, very short, acute, thick and hairy, standing between the footstalks. *Flower-stalks* axillary, opposite, solitary, longer than the footstalks, many-flowered, lax, hairy. *Calyx* coloured. *Corolla* yellowish at the points, striated with red at the bottoms of the segments. *Anthers* yellow, cohering as in the nightshade, *Solanum*. *Berry* scarlet when ripe.

HOFFMARKT, in *Geography*, a town of Austria, situated on the river March; 26 miles E.N.E. of Vienna.

HOFFMARKT, *Furth*, a town of Germany, in the margraviate of Anspach, on the Rednitz, peopled with mechanics and artificers; such especially as cannot obtain the freedom of Nuremberg. The Jews are numerous, and have a school and printing-house; five miles N.W. of Nuremberg.

HOFFWA, a town of Sweden, in West Gothland; 80 miles N. E. of Uddevalla.

HOFHAIMER, PAUL, in *Biography*, published at Nuremberg, in 1539, a tract in Latin entitled "Harmonia Poetica," the second part of which contains a notation of all the rhythms and measures of the feet of Latin verse. This tract is among Anthony Wood's printed books, in the Ashmol. Museum. Paul Hofhaimer is celebrated by Luscinius

not only as an admirable performer on the organ, on whom the emperor Maximilian conferred great honours, but as a composer of the very first class, whose productions, which were not only learned and correct, but florid and pleasing, had remained unrivalled during thirty years.

HOFMAN, EUCHORUS, published, in 1582, at Stralsund, where he was corrector of the public school, a treatise on the tones or modes of the church, "Doctrina de Tonis, seu Modis Musicis." This author, who is a follower of Glarianus, pretends that "the science of the modes, or *canto fermo*, which is the most excellent part of music, is but little understood by the moderns; but he draws his information from musicians of the highest authority."

HOFMANSTORP, in *Geography*, a town of Sweden, in Smaland; 12 miles S.E. of Wexio.

HOG, a town of Sweden, in the province of Helplingland.—Also, a small island in Pamlico sound, near the coast of North Carolina. N. lat. $34^{\circ} 56'$. W. long. $76^{\circ} 36'$.—Also, a small island in the Atlantic, near the coast of Virginia. N. lat. $37^{\circ} 30'$. W. long. $75^{\circ} 42'$.—Also, an island on the E. side of lake Champlain, in Franklin county, Vermont; nine miles long, and generally about three miles broad.—Also, an island in Narraganset bay, Rhode island, about two miles in circumference; two miles from Bristol.—Also, an island below Peach island, in Upper Canada, situated in the strait of Detroit, where it opens into lake St. Clair; containing about 300 acres of land fit for tillage, and a large quantity of marsh or meadow land. It has some wood; the land is low, but fit for pasturage, well improved, and contains in all about 1700 statute acres.—Also, one of the smaller Shetland islands, near the E. coast of Mainland. N. lat. $60^{\circ} 30'$. W. long. $1^{\circ} 12'$.—Also, a small island in the East Indian sea, near the E. coast of Palawan. N. lat. $10^{\circ} 18'$. E. long. $119^{\circ} 36'$.—Also, an island in the East Indian sea, 40 miles long and six broad; 60 miles W. of Sumatra. N. lat. $2^{\circ} 30'$. E. long. $95^{\circ} 50'$.—Also, an island in the East Indian sea, about 20 miles in circumference. S. lat. $7^{\circ} 5'$. E. long. $114^{\circ} 55'$.—Also, an island in the East Indian sea, 15 miles long, and six broad, near the W. coast of Saleyer. S. lat. $6^{\circ} 12'$. E. long. $120^{\circ} 15'$.

Hog, *Cape*, a mountainous headland on the coast of Syria, forming the S. point of the bay of Alexandretta, anciently called the "Rhosius." N. lat. $36^{\circ} 27'$. E. long. $38^{\circ} 8'$.

Hog Islands, a cluster of small islands situated near the coast of the county of Kerry, between Ballinakelie's bay, and the entrance of Kenmare river, within three or four miles of Hog's Head. There is also a single island called Hog island in the river Shannon, near its mouth.

Hog's Head, a cape of Ireland, on the S.W. coast, forming the eastern boundary of Ballinakelie bay, in the county of Kerry. N. lat. $51^{\circ} 44'$. W. long. $10^{\circ} 8'$.

HOG, in the *Linnean System of Zoology*. See SUS.

The common hog, or *sus scrofa* of Linnæus, is covered with bristles. In a wild state it is of a dark brinded colour, and under the bristles there is a soft curled hair; the ears are short and a little rounded. In its tame state, the ears are long, sharp-pointed, and slouching; the colour is generally white, sometimes mingled with other colours. The hog, in its wild state, is found in most parts of Europe, except the British isles and the countries north of the Baltic; in Asia, from Syria to the borders of the lake Baikal; in Africa, on the coast of Barbary; and in the forests of South America.

Tame hogs are found universally, except in the frigid zone and Kamtschatka, and such places where the cold is very severe. The Chinese hog is only a variety of the common hog; its belly hangs almost to the ground, its legs

are short, its tail reaches to the heels, and the body is generally bare: it is a much cleaner animal than ours. Hogs are stupid and voracious animals; inasmuch that they will eat their own offspring, and devour even infants; but it is observed, that the hog is not indiscriminate in the choice of its food; for it has been found to eat 72 species of vegetables, and to reject 171. In America it clears the country of rattle-snakes, which it eats with safety. Hogs cannot bear excessive cold, and are very restless in high winds.

There are few animals that are useful in a greater variety of ways than hogs. They are extremely prolific; their flesh is agreeable and wholesome food to those who use much exercise; and as it takes salt better than any other kind, it is of great importance to a commercial nation. Hogs furnish *brawn*, and *lard*, and *bristles*. (See each article.) In Minorca, the ass and the hog are yoked together to plough the land; and the hog has been applied to the same use in our own island, *viz.* in that part of Murray which lies between the Spey and Elgin. Pennant. See BOAR.

These animals are very profitable to the owner in different points of view, especially on some particular kinds of farms, as those of the arable and dairy descriptions. Indeed, on most farms, a few animals of this kind may be kept to great convenience and profit, as preventing the necessary waste of different refuse materials of the food kind, which can only be converted to such uses. These animals are also capable of being kept to great profit in different descriptions of large manufactories where the consumption of grain is extensive; as in those of brewing, distilling, and the making of starch, &c. The breed of hogs should be constantly well suited to the nature of the farm, and the extent of the keep which is capable of being provided for them, otherwise there may often be considerable loss sustained. The close, compact, short-legged breeds, which have much disposition to take on flesh, are, in general, to be preferred. But where the keep is good and abundant, breeds which attain a much larger size may sometimes be more beneficial and proper. See *LIVE STOCK* and *SWINE*.

Hogs are apt to dig up the ground and to break fences; but this may be prevented, by putting rings in their noses, and yokes about their necks. Leicestershire, Northamptonshire, and Hampshire, are famous for these animals, which seems owing to their being clayey countries, and that more peas and beans are sown there than in other places. The wild kind never grow so large as the tame, but they are much better tasted. The keepers of hogs should always chuse such boars for the purpose of breeding as are long-bodied, and have deep bellies and sides, short noses, thick thighs, short legs, high claws, a thick neck, and a thin chine, well set with large bristles. It is not proper to keep too many breeding sows; for they will produce so many young at a time, and this three times a year, that they will not find food enough. They usually bring thirteen or fourteen young ones in a litter, sometimes more, but they can bring up no more than they have teats to suckle. Young shoots, as they are called, that is, swine of three quarters of a year old, are best for pork, and those of a year and a half for bacon. The male pigs that are reared should be gelt, and the sows spayed; and for this purpose, those which are pigged in the spring are the best. Moist and sedge grounds are good for swine, for they eat the roots of many of the plants that grow there; and the fruit of the beech, chestnut, and hedge-bushes, fatten them well, and make their flesh much better tasted than when bred entirely in the sty.

Mr. Young observes, that hogs may be kept in summer, with great advantage to the farmer, in clover fields; and that lucern

Lucern is superior to clover for this purpose, and that saint-foin is very good; but that burnet is very bad. In winter they may be well maintained with carrots, parsnips, beets, and potatoes. The dairy should be appropriated to rearing pigs and feeding sows that have young. It appears, from other experiments of this writer on the fattening quality of several sorts of food for hogs, that pollard alone is a cheaper food than peas alone; that boiled carrots are much the most profitable; that buck-wheat is more profitable than peas; that several kinds of food mixed are better than any given alone; that the meal of any one, or various kinds of grain, is better and more profitable than the whole grain mixed or alone; and that peas and barley are much sweeter food than beans. The keeping of hogs in any city or market-town is indictable as a public nuisance.

Hog Cistern, a contrivance prepared for the purpose of containing and preserving the food employed in the keeping of hogs or swine. This sort of basin, or cistern, should be formed in such a situation as may be convenient for the kitchen, dairy, and hog-yard, being constructed in such a manner as that there may be no loss sustained in its leaking and letting out the more liquid contents. Into this tub or cistern every thing should be collected from the house, and other places, in order to be formed into wash, or soup, for the store pigs, and thereby no loss be incurred. Where large stocks of hogs are kept, it is a matter of great convenience and utility to have different tubs or cisterns of this nature, that the food may be properly prepared, and in sufficient quantities for constant use, as by this means the food admits of being more suitably mixed and blended together.

The proper construction of these sorts of receptacles is a matter of very considerable importance; in Norfolk they are chiefly built with bricks and terrace, which is an expensive method of forming them. Wooden vessels are not by any means either durable or commodious, and those of lead dangerous: Bricks laid in clay are suggested as perfectly water-tight, especially when backed by a coat of the same substance. In forming these cisterns, pits or cavities of suitable dimensions should be dug out, as of five or six feet in length, and four or five in breadth, having the depths of about five feet. The whole of the bottom of the cavity should then be well bedded with good clay, well moistened and rammed down, smoothing the surface over neatly with a trowel. Upon this flooring three courses of bricks, laid in mortar made with the best clay, should be placed in such a way as that the joints of one course may fall in the middle of the bricks of the course under it, the whole being laid lengthways, and not crossed in the usual method. The sides must be carried up half a brick thick, which is a brick in width, being laid in the mortar of good clay; the vacancy left between the brick-work, and the sides of the cavities being firmly rammed with moist clay, so as to combine the bricks as much as possible with the clay and the sides of the pits, forming them into a sort of solid body. The brick and clay-work should be carried up equally together, beating back again such bricks as may have been forced forward in the ramming of the clay, leaving the surface in the cistern quite even and regular. As, when brought up level with the surface of the ground, cisterns of this nature, of five feet and a half by four, usually measure about three feet in length, and two and a half in depth, the seam or layer of clay on the bottoms and sides must be about four inches in thickness. By way of affording a good covering to cisterns of this kind above the ground, a sort of slanting shed should be constructed over them by building slight brick-walls on each side of them to the height of three or more feet, with a gable raised at one

end, the other being left open as a door, and the top closed by a roof and tiles. This method of covering such reservoirs is far superior to those merely having flaps, or other similar contrivances.

Hog's Fennel, in *Botany*. See PEUCEDANUM.

Hog, Hedge. See ERINACEUS.

Hog, Sea Hedge. See ECHINODERMA, CENTRONIA, and Sea URCHIN.

Hog, Hairs of, in *Agriculture*, the stiff bristly sort of hair that is taken off from the body of hogs when they are killed, by means of scalding and scraping. This is a substance, where it can be collected in sufficient quantity, that may be made use of with advantage as a manure. It is capable of being occasionally purchased in the London markets at about nine or ten shillings the quarter, which is a ten bushel sack stuffed quite full; and is applied to the land in such a way, as to be turned in just before the crops are sown. In this method it is found to answer perfectly in soils of the more light description. Seal hair has likewise been found capable of being employed in the same mode with equal success.

Hog Manure, the name of that sort which is produced by hogs in the sties, yards, and other places where they are kept and confined. This is found, by experience, to be a very powerful and efficacious sort of material, being considered by some as nearly equal to that of the horse. It has, however, been suggested as an objection to it by some, that weeds are more liable to rise after the application of it, than that of some other kinds of manure.

The farmers who use the dung of hogs for their lands, generally take care to save it by well paving the sties, and increase the quantity by throwing in bean-stalks, stubble, and many other things of a like kind; and, by good management of this kind, many farmers have procured fifty or sixty load of excellent manure a-year out of a small stye. The very best way of using this dung is to mix it with horse-dung; and, for this reason, it is best to have the stye near the stable, that the two cleanings may be mixed in one heap, and used together.

They have, in many parts of Staffordshire, a poor, light, shallow land, on which they sow a kind of white pea. The land is neither able to bear this, nor any thing else, to their advantage, for reaping. But when the peas are ripe, they turn in as many hogs as the quantity of peas will fatten, suffering them to live at large, and remain there day and night; and, in consequence of this, the land will produce good crops of hay for several years afterwards, or, if too poor for that, it will, at the worst, raise grass enough to make it a good pasture-ground. See DUNG and MANURE.

Hog-plum, in *Botany*. See SPONDIAS.

Hog-beep, a term often applied to the male or wedder of one year old, as from the time of weaning to that of its being first thorn.

Hog-steer, among *Hunters*, a wild boar of three years old. See BOAR.

Hog-sty, the name of a house or building constructed for the purpose of confining and keeping different kinds of hogs and swine. Much, especially in the saving of labour, and the making of manure, as well as in the food and keeping of the animals, depends upon the sties being formed in a convenient manner. They are usually built in a very plain and simple method, the chief objects being considered those of warm dry situations for the animals to lie in, with small areas or yards before them, and proper troughs fitted up for holding their food. They are most commonly constructed with lean-to or shed-roofs, and have but seldom more than six or seven feet width, with height in the same proportion. In order to have them as convenient as possible, they should be at no very great

great distance from the house and offices, being well placed for the kitchen and dairy, but as little connected with the other out-buildings as may be. Some have suggested the great propriety and advantage, in particular cases, of having them connected in such a manner with the scullery, as that the whole of the refuse articles from it may be readily conveyed to them by means of pipes or other similar contrivances.

Where they are at a distance they should constantly be so situated as that the servants need not have occasion to enter the farm yards in the business of feeding them.

Although it be the common notion that hogs are naturally filthy in their habits, there are probably very few domestic animals that are more pleased when they have clean comfortable beds, and certainly not any on which cleanliness has a more evident effect, so far as thriving, feeding, and fattening are concerned. With the view of keeping them perfectly dry at all periods, a slight, but sufficient degree of inclination or slope outwards should constantly be given to the floors of the sties as well as those of the areas or yards with which they are connected, and proper drains be constructed for conveying away any moisture that may be present in them. The outside yards should also be a little raised above the surface of the ground, and the sties somewhat elevated above the yards. It is necessary also that there should be a number of divisions, in order to keep the different kinds of hog stock separate, as there should never be too great a number kept together, it being found by experience that they thrive and fatten better where the numbers are small, and as nearly as possible similar in the sizes. Suitable divisions are consequently to be formed for female hogs when with the boar; others for breeding swine, as well as for their farrowing in; and still others for properly weaning the young pigs in, for keeping the store pig stock in, and for fattening the hogs of proper ages in. Where the nature of the situations will admit of it, the areas or yards should be pretty extensive. And in cases where it can be done, it is of vast advantage to have water conveyed through them, as it serves not only to keep them clean with greater ease and facility, but answers a variety of other beneficial intentions.

It has been suggested by a writer on rural economy, that all pig-sties should be provided with rubbing posts. "Having occasion to shift two hogs out of a sty without one into another with a post accidentally put up to support the roof, he had a full opportunity of observing its use. The animals, when they went in, were dirty, with broken ragged coats, and dull heavy countenances. In a few days they cleared away their coats, cleaned their skins, and became sleeky haired: the enjoyments of the post were discernible, even in their looks, in their liveliness, and in their apparant contentment. It is not probable that any animal can thrive while afflicted with pain or uneasiness. Graziers suffer single trees to grow, or put up dead posts in the ground, for their cattle to rub themselves against; yet it is probable a rubbing post has never been placed intentionally in a sty; though perhaps, for a two-fold reason, rubbing is most requisite to swine."

In the construction of hog-sties, it is difficult to point out any plan that can be generally had recourse to, as they must constantly depend upon the nature of the place and various other circumstances of a local kind. It has, however, been lately suggested, that pig-sties that are of considerable extent, should constantly be in the form of a circle, or they must sustain great loss in point of convenience. In which case the centre should contain the boiling or steaming house, with a granary for corn, meal, bran, and other similar articles; having a range of cisterns in divisions around it, for the reception of the matters from the copper or steaming apparatus, as well as by pipes from the kitchen, dairy, and other places.

Around these there should be a path, and beyond it the fence, which may be a wall or paling; in which the troughs with hanging lids should be fixed, for supplying the food directly from the cisterns on one side, and for the hogs feeding at on the other: next to this there should be a range of yards, and another of low sheds beyond it, and, lastly, the receptacle for the dung. The pies or potatoe stores should at one end point nearly to the entrance, and the water should be raised to the coppers and cisterns at once by means of a proper pump; there being a trough or some other conveyance from the dairy to the cisterns for the milk, whey, and other liquid matters. This sort of arrangement, it is supposed, will be extremely convenient and beneficial, while, at the same time, the expence need not be heavy. The attaching of a certain extent of grass land, or that of sown grasses, in proper divisions, into which the hogs may be capable of being turned as it may be found necessary, is, it is hinted, a matter of vast utility, where the nature of the situation will admit of its being done. Where there is not a proper and conveniently formed pig apparatus, little idea can be had of its advantage in the making of manure. Yet this alone, it is conceived, is an object that would justify any good farmer in going to a certain expence in attaining so profitable a portion of what should constitute his farm-yard system. It is stated as lamentable to see in nine-tenths of the farmeries of the kingdom, so many parts of the proper piggery scattered and unconnected in such a way as to prevent convenience, multiply labour, and retard the forming of plentiful supplies of valuable manure. The building of a hoggery, somewhat though not exactly upon this principle, was found to cost, including the boiling house, copper, pond, cisterns, shed, paling, paving, and troughs, about 78*l.*, independent of the timber. By means of a yard of this description, one man will be capable of managing three times as many hogs as would otherwise be the case. And where they are properly and completely littered, the quantity of excellent manure that is formed is very astonishing. The extent of 98 loads of very rich dung compost, valued on the spot at five shillings the load, has been found to be made by the number of about 80 or 90 fattening hogs, or a clear profit of 15 or 16*l.*, derived solely from that article; and it would be double that, if the littering was performed in a complete manner. These statements fully prove the prodigious importance of possessing such conveniences in the fattening of great numbers of hogs, in the view of raising manure.

Supposing the whole of the expence, including every thing, in one of these sties; to rise to 100*l.* and the interest to be five pounds per annum; it is asked, what comparison there can be between the annual expence of five pounds, and the prodigious utility of having the power of constantly fattening with scarcely any expence of labour, any number of hogs that may be required? By means of such conveniences the whole of the peas, beans, barley, buck-wheat, potatoes, parsnips, carrots, and other similar sorts of food that are capable, or can be produced on a farm, may be converted to the purpose of rearing, feeding, or fattening of hogs; by which the farmer has the means of improving his ground in the cheapest manner, and to the fullest extent.

At present, the expence of such sheds and yards would be nearly double the above sum; and, where erected upon the most correct plan, still considerably more. The general principle should, however, be followed in sties of much smaller dimensions. In many cases and circumstances, other plans and forms may, however, be followed with great propriety and advantage, being contrived so as to suit the local nature of the different situations.

Hog-trough, a kind of box or other contrivance constructed for the purpose of containing the food of hogs until it be consumed. There are various kinds of troughs of this nature, which are formed of different sorts of materials under different circumstances; but those of wood and stone are by much the most usual. From the circumstance of hogs being liable to spill and waste a considerable portion of their food by getting their feet into it, Mr. Bateson has been induced to attempt the prevention of it, by having a rail or covering made to slope from the back to the fore part of the trough, which may be formed of any sort of thin deal, just sufficient room being left to admit the heads of the animals. Divisions are likewise made crossways of the troughs, in proportion to the number of the hogs, in order to prevent the strongest from driving away such as are weak. But these divisions are not necessary to extend to the bottom of the troughs; they should, however, rise a little higher than the top, and are capable of being formed of portions of boards, which are about eight or ten inches in breadth. But another way of preventing them from wasting their food, it is conceived, would be to have shallow wooden troughs placed about a foot from the ground, having large deep troughs above them with open bottoms. The food is deposited in the large upper troughs, but at the same time no more is capable of passing down, than what rests in the bottoms of the shallow troughs; consequently, when that is consumed, a fresh supply will continually take place from the large upper troughs.

However, for food of the more liquid kind, such as milk, whey, and others of a similar kind, there may, it is supposed, be a stone trough below, and spars or holes in the bottom of the shallow trough, to let the fluid matters pass through. These sorts of troughs are capable of being made to serve two divisions of the sty at the same time, by having them fixed up between them. Where water can be conducted through the sty in a small stream, by means of an open sort of spout, so that it may conveniently supply the animals, it will be found of very great advantage.

Hog-weed, in *Botany*. See **BOERHAVIA**.

Hog-weed, a name frequently applied provincially to knot-grass.

Hog, on board of a *Ship*, is a sort of flat scrubbing broom, formed by inclosing a number of short twigs of birch or such wood, between two pieces of plank fastened together, and cutting off the ends of the twigs, and serving to scrape the filth from a ship's bottom, under water, particularly in the act of boot-topping. For this purpose they fit to this broom a long staff with two ropes; one of which is used to thrust the hog under the ship's bottom, and the other to guide and pull it up again, close to the planks. This business is commonly performed in the ship's boat, which is confined as close as possible to the vessel's side during the operation, and shifted from one part of the side to another, till the whole is completed. *Marine Dict.*

Hogs' Bones, *Petrified*, in *Natural History*. Writers on extraneous fossils have mentioned but very few bones or teeth which they refer to the genus *sus* or hog, and have preserved little which is precise enough to entitle them to this classification. M. G. A. Cuvier, who gives a memoir on this subject, in the 14th vol. of the "Annales du Muséum," of which a translation may be seen in the *Phil. Mag.* vol. 35, p. 219, considers all the fossil remains which can safely be referred to the genus *sus* (whose characters, applicable to this enquiry, he gives) to belong to the peats and most modern of the alluvia of low grounds, or to be peat or recent fossils.

HOGARTH, WILLIAM, in *Biography*, one of those few original and extraordinary characters whom it has pleased Providence occasionally to bless the world with; to enlighten mankind, and to carry the arts and sciences necessary for their comfort, pleasure, and improvement, nearer to perfection. It cannot, indeed, be truly said of Hogarth, that he improved the practice of the arts of painting and engraving which he professed; but he merited the praise of having more powerfully exhibited their moral utility than any of his predecessors; and that in a new and till then unthought of mode, more generally felt and understood, being adapted to the feelings of all orders of men, as it arose from a close observance of the actions and expressions common to all under the influence of the passions. Moved by the impulse of genius rather than the tuition of man, he travelled in a path unexplored by any before him, and which yet remains closed to succeeding artists. Possessing, by early practice, the knowledge of the art of engraving, he was happily enabled to disseminate, by its means, the ingenious inventions and labours of his mind, in a manner more perfect than those of other painters have been presented to the world, or than probably ever again will be done, till another painter shall be his own engraver. Stimulated by the love of fame, and the desire of many of his friends, Hogarth, towards the close of his life, composed a short history of himself, from whence we shall extract the most essential parts; and present our readers with some illustration of his works, his character, his pretensions to public favour, and the reception he experienced.

His father's name was Richard, he was a man devoted to literature; but his pen, like that of many other authors, did not enable him to do more for his children than to give them education; and merely, as his son observed, put them in a way of shifting for themselves. William, of whom we now treat, was born in London, in the parish of St. Bartholomew the Great, on the 10th of November, 1697. What will those who hold the non-existence of innate genius for peculiar arts, &c. reply to Hogarth's account of the sensations he experienced in his infancy? *viz.* "Having naturally a good eye and fondness for drawing, shows of all sorts gave me uncommon pleasure when a child, and mimicry was remarkable in me."—"An early access to a neighbouring painter drew my attention from play, and I was at every possible opportunity employed in making drawings."—"My exercises, when at school, were more remarkable for the ornaments which adorned them, than for the exercise itself; in the former, I soon found that blockheads with better memories could much surpass me, but for the latter I was particularly distinguished."—"It was therefore very conformable to my own wishes that I was taken from school and served a long apprenticeship to a silver-plate engraver." This engraver was Mr. Ellis Gamble, of Cranbourn-alley.

"I soon found this business in every respect too limited. The paintings of St. Paul's cathedral and Greenwich hospital, then going on by Sir James Thornhill, ran in my head; and I determined that silver-plate engraving should be followed no longer than necessity obliged me to it. Engraving on copper was, at twenty years of age, my utmost ambition. To attain this, it was necessary that I should learn to draw objects something like nature, instead of the monsters of heraldry." Animated by this desire, he considered how he could, by the shortest way, obtain possession of the knowledge he required; and spurning the regular mode of academical study, adopted a plan of his own. "Many reasons," he says, "led me to wish that I could find the shorter path; six forms and characters in my mind; and instead of copying lines, try and read the language of the

art; and, if possible, find its grammar, by bringing into one form the various observations I had made, and then try how far I could combine them, and apply them to practice.

“Laying it down first, as an axiom, that he who could by any means acquire and retain in his memory perfect ideas of the subjects he meant to draw, would have as clear a knowledge of the figure as a man, who can write freely, hath of the twenty-four letters of the alphabet, and their infinite combinations (each of these being composed of lines); and would consequently be an accurate designer:—

“I, therefore, endeavoured to habituate myself to the exercise of a sort of technical memory, and by repeating in my own mind the parts of which objects were composed, I would by degrees combine and put them down in pencil. Thus, with all the drawbacks which resulted from the circumstances in which I was placed, I had one material advantage over my competitors, *viz.* the early habit I thus acquired of retaining in my mind’s eye, without coldly copying it on the spot, whatever I intended to imitate.

“My pleasures and my studies thus going on hand in hand, the most striking objects that presented themselves, either comic or tragic, made the strongest impressions on my mind; but had I not sedulously practised what I had thus acquired, I should very soon have lost the power of performing it.”—“Instead of burthening the memory with musty rules, or tiring the eyes with copying dry and damaged pictures, I have ever found studying from nature the shortest and safest way of attaining knowledge in my art. By adopting this method, I found a redundancy of matter continually occurring. A choice of composition was the next thing to be considered, and my constitutional idleness naturally led me to the use of such materials as I had previously collected; and to this I was further induced by thinking, that if properly combined, they might be made the most useful to society in painting, although similar subjects had often failed in writing and preaching.”

In concurrence, therefore, with this reasoning, Hogarth set about qualifying himself for the pursuit of his object immediately upon the expiration of his apprenticeship, which was about the year 1718; and began to engrave on copper for the booksellers. This praise-worthy emulation wrought with him as it generally does with those who dare to enter so self-denying a course of existence. He continued to live in industrious indigence for some time, whilst those who had the means of vending his early productions were growing rich by his labours.

It is said of one of those patrons of the youthful artist, that he very generously offered him half-a-crown a pound for a finished plate; and at another time the same person offered to Mr. Major two plain pieces of copper for two engraved ones; with the *generous view* that the youth might not lack the means of exerting his ingenuity!

Feeling the full weight of this kind of treatment, Hogarth resolved upon publishing on his own account. But in this he had to encounter another enemy in the body of printfellers, who, upon his publishing his first plate of “The Taste of the Town, or Burlington Gate,” (in 1724,) soon procured copies of it, and sold them at half the price; so that he was obliged to sell the plate as their shops were the only places of sale.

“Owing to these kinds of circumstances, till I was near thirty years of age,” he says, “I could do little more than barely maintain myself by engraving.”

It is probable, that about the time of publishing the above-mentioned print he commenced painter; as Mr. John Ireland states, in his account of Hogarth, that he was in pos-

session of a set of pictures designed for the large plates he published from Butler’s *Hudibras* in 1726. They are but indifferent in the promise they hold forth of their author, and are executed in somewhat of the style of Hemskirk. From this time he was known as a painter, and employed in painting portraits, and small pictures of family conversations, as they are called, or groups of family portraits.

In 1729, he married the only daughter of Sir James Thornhill, without the consent of the knight her father; who probably regarded him as an inferior artist, and felt degraded by the union, till the designs for the *Harlot’s Progress* were laid before him; satisfied then that his daughter had chosen a man of extraordinary merit, though poor in purse, he became reconciled to the match, and lived till his death in terms of intimacy with his son-in-law, and was a constant and generous friend to him.

Hogarth proceeded with success for some time in painting his portraits, “but feeling it a kind of drudgery, and as I could not act like some of my brethren, and make it a sort of manufactory to be carried on by the help of back-ground and drapery painting; it was not sufficiently profitable to pay the expences of my family. I therefore turned my thoughts to a still more novel mode in painting and engraving modern moral subjects, a field not broken up in any country or any age.

“The reasons which induced me to adopt this mode of designing were, that I thought both writers and painters had, in the historical style, totally overlooked that intermediate species of subjects which may be placed between the sublime and grotesque. I therefore chose to compose pictures on canvas, similar to representations on the stage: and farther hope that they will be tried by the same test and criticised by the same criterion.

“In these compositions, those subjects that will both entertain and improve the mind bid fair to be of the greatest public utility, and must, therefore, be entitled to rank in the highest class.”—“I have endeavoured to treat my subject as a dramatic writer; my picture as my stage, and men and women my players; who, by means of certain actions and gestures, are to exhibit a *dumb show*.

“In pursuing my studies, I made all possible use of the technical memory, which I have before described, by observing, and endeavouring to retain in my mind lineally, such objects as best suited my purpose: so that, be where I would, while my eyes were open, I was continually at my studies; and acquiring something useful to my profession. A redundancy of matter being by this means acquired, it is natural to suppose, that I introduced it into my works on every occasion that I could.

“By this *idle* way of proceeding, I grew so profane as to admire nature beyond the first productions of art; and acknowledged I saw, or fancied, delicacies in the life so far surpassing the utmost efforts of imitation, that when I drew the comparison in my mind, I could not help uttering blasphemous expressions against the divinity of Raphael, Correggio, and Michael-Angelo. For this, though my brethren have most unmercifully abused me, I hope to be forgiven. I confess to have frequently said, that I thought the style of painting which I had adopted, admitting that my powers were not equal to doing it, might, one time or other, come into better hands, and be made more entertaining, and more useful, than the eternal blazoning, and tedious repetition, of hackneyed beaten subjects, either from the scriptures, or the old ridiculous stories of heathen gods: as neither the religion of the one or the other requires promoting among Protestants, as it formerly did in Greece; and at a later period in Rome.”

HOGARTH.

In language of this nature Hogarth was accused of vanity, and of enviously endeavouring to under-rate what he was unable to execute. And certainly with much justice the remarks appear to have been made; for, previously to his adopting the line of conduct in painting, which was so suitable to his peculiar genius, he attempted several pictures in the grand historical style, and in all failed most woefully. It is apparent that he at no time of his life understood the object or character of that species of art, and was, therefore, ill qualified to judge of its value. But probably he was urged to the strong declarations which he indulged in, by seeing the success of infamous dealers in bad copies, and continually hearing, as all painters are obliged to do, bad originals exalted beyond all bounds, because they are supposed to be the productions of this or that man of genius; while, in fact, they may be the inferior labours of some mongrel imitator. What, however, but the extreme of vanity, could induce a man, so ill trained in art, to think of contending with Poussin and Correggio in history, and with Vandyke in portrait. He asserted himself equal to either in their way, and in both proved himself grossly defective. In his own line and manner, and in that alone, distinct from every one, he was super-excellent; conceiving his subjects with most consummate intelligence, and executing them with appropriate character and style.

After some time he felt the effect of the remarks of his adversaries (though he never acknowledged his incapacity), and almost entirely abandoned portraiture and serious history; and wisely adhered to his judicious choice of subject and manner; for the adoption of which he felt such powerful reasons as are mentioned above.

He had, however, in the interim, favoured the world with various productions of that kind, which were then, and still are, and probably for ever will be, highly esteemed. In 1733 he published his first great work, "The Harlot's Progress;" and in 1735, it was followed by its counterpart, "The Rake's Progress." The very extraordinary merit of these productions, and the favourable reception they met with, soon induced the print-sellers to be guilty of the base and mean conduct of having copies made of them, and thus rob the ingenious author of his well-earned reward.

To prevent this nefarious practice from continuing, Hogarth, in conjunction with Vertue and five other artists, in the year 1735, applied, by petition to the legislature, for a bill to protect their property, similar to that for the security of copy-right in literary productions. A bill was consequently passed to secure the property of an engraved plate to the original possessor of it for fourteen years from the first day of publication; which was to be specified on the print. From this time, and owing more to this circumstance than any other, prints have become a very considerable article of commerce in this country. Our artist commemorated the circumstance, by an emblematical engraving, with an inscription expressive of the subject; impressions from which he issued at various times, and on the publication of one of his electioneering prints in the following year, he made it the subscription ticket.

Upon the security of this act, Hogarth employed himself with alacrity, and produced other works, which, while taste and good sense prevail in the world, will ensure the admiration of all who possess these useful qualities, by their ingenuity, and the force of their satire. In 1736 he published "The Sleeping Congregation;" "The Distressed Poet;" and some others of less note. In 1738 "The Four Parts of the Day; Morning, Noon, Evening, and Night;" "Strolling Actresses dressing in a Barn;" &c. In 1741, "The Enraged Musician;" and in this and three following years,

he appears to have laboured hard at a number of minor productions, and in preparing the plates of his most celebrated work, "The Marriage-à-la-mode," of which he had given notice in 1743. He had projected a counter-part to this subject of "A Happy Marriage," to be treated likewise in six prints; but one only of the designs for it was completed, and that was never engraved.

The very excellent and admired series of prints just alluded to, were followed, in 1747, by those of the "Industrious and Idle Apprentices;" works whose moral utility is felt and acknowledged by all. Gay's "Macheath in the Beggar's Opera," by his spirited gallantry, is said to have been the cause of many a youth falling into bad courses: it is hardly possible to calculate the efficacy of these prints in a contrary direction; probably much more than lectures or sermons of the utmost eloquence could produce. The impression they made at the time was almost incredible.

Hogarth's own account of the motives which induced him to publish these two series do him infinite honour, and shew the nobleness of his views. "These twelve prints were calculated for the instruction of young people, and every thing addressed to them is fully described in words as well as figures," &c.—"Considering the persons they were intended to serve, I have endeavoured to render them intelligible, and as cheap as possible. Fine engraving is not necessary for such subjects, if, what is infinitely more material, character and expression is properly preserved."—"These prints I have always found sell much more rapidly at Christmas than at any other time."

Soon after the treaty of Aix la Chapelle, Hogarth, in search after character and matter for the employment of his pencil, went over to France; but allowing his natural inclination to get the better of his judgment, and seduce him to draw "The Gate of Calais," of which he, after his return, published the humorous print under that title, he was prevented, by imprisonment in his lodgings, from proceeding beyond that town; and soon after compelled to go on board a ship and return to England.

In 1745, finding that, however great the success of his prints might be, the public were not inclined to take his pictures off his hands, he was induced to offer some of them, and those of the best he had then produced, for disposal by way of auction; but after a plan of his own, *viz.* by keeping open a book to receive biddings from the first day of February to the last day of the same month, at 12 o'clock. The ticket of admission to the sale was his print of "The Battle of the Pictures;" a humorous production, in which he ingeniously upheld his assertions concerning the preference so unfairly given to old pictures, and the tricks of the dealers in them. See Nichol's and Ireland's Account of Hogarth.

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|---------------------------------------|---|----------|
| The pictures thus disposed of were, | | |
| The six of the Harlot's Progress, for | £ | 88 4 0 |
| Eight of the Rake's Progress | - | 184 16 0 |
| Morning | - | 21 0 0 |
| Noon | - | 38 17 0 |
| Evening | - | 39 18 0 |
| Night | - | 27 6 0 |
| Strolling Players dressing in a Barn | - | 27 6 0 |

In 1746, having finished his picture of "The March of the Guards towards Finchley," he offered proposals for a print from it, and a scheme to dispose of the picture itself, by a lottery of chances, at so low a price as three shillings, in addition to 7s. 6d. subscribed for a print. Having disposed of 1843 chances, he gave his remaining numbers, amounting to 167, to the Foundling hospital, one of which, when the plate was finished, and the lottery drawn, in the year 1750, was fortunate, and that very extraordinary and

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ingenious

ingenious production thus became the property of that Institution; within whose walls it yet remains, with several other of his productions; particularly an excellent portrait of captain Thomas Coram, founder of the hospital, and an historical picture of "Moses brought before Pharaoh's Daughter."—By this scheme, Hogarth obtained 300*l.* for the picture, observing, "that it was his only chance of being paid for his time: such was the patronage of the arts at that period in England; now happily very highly increased, to the credit of the public, and the advancement of the practical part of the art at least.

In the year in which the above-mentioned print was published, Hogarth was employed by the benchers of Lincoln's Inn to paint a picture for their hall, in consequence of their having been bequeathed 200*l.* by lord Wyndham, chancellor of Ireland, for the purpose of ornamenting that room as they thought proper. On the proposal of lord Mansfield, the voice of the members was given for a picture by our artist, and, unhappily for his reputation, he chose a subject of an elevated and serious nature, "St. Paul before Felix." From one who presumed to smile at the high estimation in which the real works of the renowned artists of Italy were held, and boasted of his power to rival them, the world had a right to expect much.

Instead of answering such expectation, he totally failed. In every requisite for such a work, it must be owned, by his best friends, this picture is wretchedly defective. It still occupies its original situation, and exhibits an useful lesson to those who place too high a value on their natural talents; and teaches them not to waste their powers on matters for which previous education has not prepared them; nor too readily to under-rate those of others, exerted in a different manner. Every branch of the art of painting requires its appropriate studies, and no man can combine materials with which he is unacquainted. Hogarth, employed to earn his bread from the first, had not the time or the means, in this country, to inform himself properly of what was grand and impressive in the art. That which was expressive in common life he felt, and delineated with great force, but with common-place effect. Selection of beauty, of dignity and grandeur, which this subject required, he evidently knew nothing of; and consequently failed in his attempt to inspire his figures with such qualities.

Whether he felt this himself when the picture was completed may be doubted; but he certainly attempted to parry criticism, by satirising his own work, and published a ludicrous print of the subject, nearly of the same composition, but attempted to throw the effect upon Rembrandt's manner of etching. Upon advertising a print of the real picture, he adds, "On the first payment a receipt will be given, which receipt will contain a new print (*in the true Dutch taste*) of "Paul before Felix;" which, after the subscription is over, will not be sold at a less price than one guinea each."

At the same time he advertised for sale his most beautiful series of pictures before mentioned, "The Marriage-a-la-mode," by a manner of bidding peculiar to himself; from which he excluded all dealers in pictures. The mode he adopted was by written tickets, on which subscribers wrote their names and the price they would give. This was kept open for the space of one month. But either the public were not alive to the beauties and excellencies of these incomparable works, or his manner of proceeding displeased them: for the fact is, there were few competitors, and they were sold at the low price of 120 guineas, with their frames, to Mr. John Lane, of Hillingdon; on whose death they became the property of his nephew, colonel Cawthorne.

Being offered at auction by Mr. Christie, in 1792, the proprietor bought them in at 900 guineas. A short time afterwards they were bought by Mr. Angerstein, at the price of 1000 guineas, and with him they still remain, justly and deservedly admired for their fulness of character and expression, and their beauty of composition, colouring, and execution, and are a complete falsification of Mr. Walpole's assertion, "that Hogarth was no painter."

In the following year, 1751, he published his moral and instructive prints of "Beer-street," "Gin-lane," and "The four Stages of Cruelty." The generous and truly humane motives which induced him to make the four last designs he himself has thus described: "These prints were engraved with the hope of, in some measure, correcting that barbarous treatment of animals, the very sight of which renders the streets of our metropolis so distressing to every feeling mind. If they have had this effect, I am more proud of having been the author, than I should be of having painted Raphael's cartoons."

During the time of which we have been treating concerning Hogarth's practice and studies, he continued occasionally to paint portraits; but it was not his forte. He produced, indeed, several acknowledged strong likenesses, but without any elevation of sentiment or character.

He now thought it proper, in order to justify and enforce many points upon which he had disagreed and contended with other artists, to turn author. He had, in the year 1745, painted his own portrait with his dog; before him lay a palette spread with colours, and on it was drawn a waving line, which he entitled "The Line of Beauty." In this, Hogarth had a design. It appeared an enigma, and he himself relates, that, "no Egyptian hieroglyphic ever amused for a time more than it did. Painters and sculptors came to me to know the meaning of it, being as much puzzled with it as other people, till it came to have some explanation; then, and not till then, some found it out to be an old acquaintance of theirs."—"Others denied that there could be such a rule either in art or nature, &c." See preface to the work, which, in 1753, he thought fit to publish under the title of "*The Analysis of Beauty*," written with a view of fixing the fluctuating ideas of *Taste*." Its object is to shew that waving lines are the source of beauty; and that grace is superadded, when that line is twilled to a certain degree, and becomes serpentine. In it are numerous references to various objects represented in two prints, which he etched and published with the book, and in which, if he has not satisfactorily illustrated the whole of his intention, he has done enough to prove the truth of his main position. Every artist may obtain benefit by the perusal of the work. It is divided into chapters, treating of those points, which, in his mind, formed the basis of beauty; *viz.* fitness, variety, symmetry, simplicity, intricacy, quantity; and he adds to these, others on lines, compositions with the waving line, compositions with the serpentine line, proportion, light and shade, colouring, the face, attitude, and action.

Hogarth, in the consciousness of the pencil, not the pen, being the instrument by which he could best illustrate his ingenious and original thoughts; at first intended to engage some literary person to write what he should dictate, but soon discarded that idea: and having written his work, subjected it by parts to the correction of Dr. Morrell, after whose death, the Rev. Mr. Townley kindly undertook the unthankful task of castigation on a young author; who, nevertheless, profited so much by the remarks on the first pages, that he greatly advanced in facility of expression as he proceeded with it. The style is plain and unadorned, but clear and intelligible.

His mode of illustration is original and ingenious. We are satisfied there is great truth in his principles and observations; and that the world of art is greatly indebted to him for the work, though there are many opinions in which we cannot coincide; and wish he had not indulged so freely in ill-natured and spleenic allusions to persons and things not connected with his subject. These latter drew upon him, in consequence, much invective and satire; and by his own account, "the uneasiness it occasioned him, more than counter-balanced the pleasure afforded by its general success." See his own history, written by himself, in John Ireland's *Illustrations*, vol. iii. p. 103. where he has given much additional and ingenious reasoning on the subject of his book, but speaks solely of the unfairness of the attacks made upon him; which were many, and of no very delicate nature. In opposition to this, he had the favourable testimony of many learned men, (Warburton among them,) in its favour. It was translated into German by Mylius, under the author's inspection; and an Italian translation was soon afterwards published at Leghorn.

In 1754, the members of the Imperial Academy at Augsburg, erected for the study and improvement of arts and letters, were induced, on the appearance of this work among them, to elect Hogarth a counsellor and honorary member. In addition to this high founding title, he had a more substantial benefit conferred upon him this year, by the appointment of serjeant painter to the king, which produced him 200*l.* per annum.

In 1755 he published the plates of the election, which was the last series of prints he favoured the world with; but he afterwards sent forth several single prints, fraught with useful moral instruction, conveyed by ingenious satire on the public follies of the day. The most striking among them, were, "The Cockpit," "Enthusiasm delineated," and "The Medley, or a satire on Credulity, Superstition, and Fanaticism," which last appeared in 1762.

In the interim he made another unsuccessful attempt at serious historical painting; and that under circumstances particularly unfavourable to him; the failure in which, or rather the public circumstances connected with it, was thought by many to have hastened his end. He was induced by vanity to endeavour at rivalry with a picture, said to be by Correggio, of "Sigismunda weeping over the Heart of her Lover." The consequence was, what might justly have been expected, disappointment, with the world at least, however he might himself appreciate it. He set the same value upon it as its prototype had brought at sale by public auction, *viz.* 400*l.* The nobleman for whom it was painted excused himself from taking it, and it remained with Hogarth to his death. It is at present in the possession of Mr. Alderman Boydell. See an account of it in Ireland's and Nichol's *Anecdotes, &c.* of Hogarth.

It is lamentable, that a man so highly useful and honourable to his country and the arts he professed, should, by singularity, and by an impolitic, although upright mode of conduct, bring enemies upon himself as he advanced in years; who, unequal to cope with him for the bright rewards of genius, yet had influence enough in the world to sling him, and that remorselessly, by petty, paltry efforts. These, though they could never seriously wound his fame, yet disturbed his repose, and prevented the enjoyment of those well earned encomiums the wife and virtuous were inclined to bestow upon his meritorious efforts. Such, unhappily, was the fate of Hogarth. Strong in mind, original in reflection, and deeply reflective, but narrowed by want of education; he lavished abroad opinions peculiar to himself; opposing old and well-founded reasonings, because he saw more of

their abuse than of their utility. He appears to have been a humourist, but of the best class. He spoke his mind freely, heedless of the result. Its effect upon him proves to others who may be inclined to follow the same course, that it is not always to be pursued with impunity.

To shew that these remarks are well founded, we shall insert his own account of his feelings on the observations made upon his *Sigismunda*; "the most violent and virulent abuse thrown on *Sigismunda* was from a set of miscreants, with whom I am proud of being *ever at war*. I mean *the expounders of the mysteries of old pictures*. I have been sometimes told they were beneath my notice. This is true of them individually, but as they have access to people of rank, who seem as happy in being cheated as these merchants are in cheating them, they have a power of doing much mischief to modern artists. However mean the vender of poisons, the mineral is destructive; *to me its operation was troublesome enough*. Ill-nature spread so fast, that now was the time for every little dog in the profession to bark, and revive the old spleen which appeared at the time of the *Analysis*. The anxiety that attends endeavouring to recollect ideas long dormant, and the misfortunes which clung to this transaction, coming at a time when nature demands quiet, and something besides exercise to cheer it, added to my long sedentary life, brought on an illness which continued twelve months. But when I got well enough to ride on horseback, I soon recovered."

In a state thus irritable, goaded by malignity and envy, and resting entirely upon his own conscious rectitude, and the consolation of a few friends, who knew how to estimate his talents and his genuine worth, for support; he continued to employ himself on minor labours; till, in 1762, he unfortunately elicited a flame of enmity in the breasts of two powerful antagonists, under whose united efforts he sunk. These were Wilkes and Churchill, whose great ingenuity and keen satire he drew upon himself, by exhibiting them in his print of "The Times," as incendiaries; fomenters of public disturbances. His own account of this circumstance we shall extract from J. Ireland's *Illust.* vol. iii. p. 212, et seq. "This being a period when war abroad, and contention at home filled every body's mind, prints were thrown into the back-ground, and the stagnation rendered it necessary that I should do some *timed thing* to recover my lost time, and stop a gap in my income. This drew forth my print of "The Times," a subject which tended to the restoration of peace and unanimity, and put the opposers of these humane objects in a light which gave great offence to those who were trying to foment destruction in the minds of the populace. One of the most notorious among them, till now rather my friend and flatterer, attacked me in a North Briton, in so infamous and malign a style, that he himself, when pushed, even by his best friends, was driven to so poor an excuse, as to say, *he was drunk when he wrote it*. Being at that time very weak, and in a kind of slow fever, it could not but seize on a feeling mind. My philosophical friends advise me to laugh at the nonsense of party-writing—who would mind it? But I cannot rest myself." To revenge himself, he published a likeness of Wilkes, which doubtless he thought was the greatest satire upon his pretension to political honesty and heroic character that he could produce. This drew upon him Churchill the poet, who severely treated him in an epistle, fraught with the grossest abuse and the utmost malignity, and even falsehood, though in some parts justly complimentary. All that the bitterness of resentment could dictate, or the malevolence of the keenest satire inspire, is poured forth in it upon the devoted Hogarth, who could only retort by a print of a bear with a pot of porter and a

ragged staff, on the knots of which was written lies, lies, lies!

This unhappy event Hogarth did not long survive. It is said that he did not suffer in mind by the coarse attack of Churchill, so much as by the previous one by Wilkes; he says of it himself, that "it made no impression, but perhaps in some measure effaced or weakened the black strokes of the North Briton." And he concludes his own memoir by saying, "Thus have I gone through the principal circumstances of a life which, till lately, passed pretty much to my own satisfaction, and I hope in no respect injurious to any other man. This I can safely assert, I have invariably endeavoured to make those about me tolerably happy, and my greatest enemy cannot say I ever did an intentional injury; though, without ostentation, I could produce many instances of men that have been essentially benefited by me. What may follow God knows! Finis."

Such is the candid appeal, which, in consciousness of found principle and rectitude of heart, this excellent artist and well intentioned man made to his contemporaries and to posterity. Let the human weakness he exhibited in common with his fellow men teach them, like his works, (which necessarily lead to moral reflection), that strict government of the heart and mind, and kind indulgence to the infirmities of others, are the surest guides to happiness; here, as well as hereafter.

His last original production he termed *Finis*, the Bathos, or the Art of sinking in Sublime Painting; which Mr. J. Ireland justly terms an enigmatical and punical print. The origin and production of which he thus describes.

After dinner, with a few social friends at his own table, he was asked what will be the subject of your next print? "The end of all things;" was his reply. If that should be the case, added one of his friends, your business will be finished, for there will be an end of the painter. With a look that conveyed a consciousness of approaching dissolution, and a deep sigh, he answered, "there will be so, and therefore, *the sooner my work is done the better.*" With this impulse, he next day began the plate, and seeming to consider it as a *terminus to his fame*, never turned to the right or left until he arrived at the end of his journey.

The above print was published in March 1764, and in the October following, death put a *finis* to the labours of this extraordinary man, and deprived society of one of its most useful members; who contributed alike to its amusement and its improvement, and has left a perpetual fund of both for the benefit of future ages.

The following concisely critical dissertation upon the character and works of Hogarth, from the elegant pen of the late Horace Walpole, earl of Orford, we conceive will be agreeable to our readers, and prove a valuable addition to the above account of his life.

"Having dispatched the herd of our painters in oil, I reserved to a class by himself that great and original genius, Hogarth; considering him rather as a writer of comedy with a pencil, than as a painter. If catching the manners and follies of an age *living as they rise*, if general satire on vices and ridicules, familiarised by strokes of nature, and heightened by wit, and the whole animated by proper and just expressions of the passions, be comedy, Hogarth composed comedies as much as Moliere; in his *Marriage A-la-mode* there is even an intrigue carried on throughout the piece. He is more true to character than Congreve; each personage is distinct from the rest, acts in his sphere, and cannot be confounded with any other of the *dramatis personæ*. The alderman's footboy, in the last print of the set I have mentioned, is an ignorant rustic; and if wit is struck

out from the characters in which it is not expected, it is from their acting conformably to their situation, and from the mode of their passions, not from their having the wit of fine gentlemen. Thus there is wit in the figure of the alderman, who, when his daughter is expiring in the agonies of poison, wears a face of solicitude, but it is to save her gold ring, which he is drawing gently from her finger. The thought is parallel to Moliere's, where the miser puts out one of the candles as he is talking. Moliere, inimitable as he has proved, brought a rude theatre to perfection. Hogarth had no model to follow and improve upon. He created his art; and used colours instead of language. His place is between the Italians, whom we may consider as epic poets and tragedians, and the Flemish painters, who are as writers of farce and editors of burlesque nature. They are the Tom Browns of the mob. Hogarth resembles Butler, but his subjects are more universal; and amidst all his pleasantry, he observes the true end of comedy, reformation; there is always a moral to his pictures. Sometimes he rose to tragedy, not in the catastrophe of kings and heroes, but in marking how vice conducts, insensibly and incidentally, to misery and shame. He warns against encouraging cruelty and idleness in young minds, and discerns how the different vices of the great and the vulgar lead by various paths to the same unhappiness. The fine lady in *Marriage A-la-mode*, and Tom Nero in the *Four Stages of Cruelty*, terminate their story in blood,—the occasions the murder of her husband; he assassinates his mistress. How delicate and superior too is his satire, when he intimates in the College of Physicians and Surgeons that preside at a dissection, how the legal habitude of viewing shocking scenes hardens the human mind, and renders it unfeeling. The president maintains the dignity of insensibility over an executed corpse, and considers it but as the object of a lecture. In the print of the *Sleeping Judges*, this habitual indifference only excites our laughter.

"It is to Hogarth's honour that, in so many scenes of satire or ridicule, it is obvious that ill-nature did not guide his pencil. His end is always reformation, and his reproofs general. Except in the print of the Times, and the two portraits of Mr. Wilkes and Mr. Churchill, that followed, no man, amidst such a profusion of characteristic faces, ever pretended to discover or charge him with the caricature of a real person; except of such notorious characters as Chartres and mother Needham, and a very few more, who are acting officially and suitably to their professions. As he must have observed so carefully the operation of the passions on the countenance, it is even wonderful that he never, though without intention, delivered the very features of any identical person. It is at the same time a proof of his intimate intuition into nature; but had he been too severe, the humanity of endeavouring to root out cruelty to animals would atone for many satires. It is another proof that he drew all his stores from nature and the force of his own genius, and was indebted neither to models nor books for his style, thoughts or hints, that he never succeeded when he designed for the works of other men. I do not speak of his early performances at the time that he was engaged by booksellers, and rose not above those they generally employ; but in his maturer age, when he had invented his art, and gave a few designs for some great authors, as Cervantes, Gulliver, and even Hudibras, his compositions were tame, spiritless, void of humour, and never reach the merits of the books they were designed to illustrate. He could not bend his talents to think after any body else. He could think like a great genius rather than after one. I have a sketch in oil that he gave me, which he intended to engrave; it was done at the

HOGARTH.

time that the house of commons appointed a committee to enquire into the cruelties exercised on prisoners in the Fleet to extort money from them. The scene is the committee; on the table are the instruments of torture. A prisoner in rags, half starved, appears before them; the poor man has a good countenance, that adds to the interest. On the other hand is the inhuman gaoler. It is the very figure that Salvator Rosa would have drawn for Iago in the moment of detection. Villany, fear, and conscience, are mixed in yellow and livid on his countenance; his lips are contracted by tremor, his face advances as eager to lie, his legs step back as thinking to make his escape; one hand is thrust precipitately into his bosom, the fingers of the other are catching uncertainly at his button-holes. If this was a portrait, it is the most speaking that ever was drawn; if it was not, it is still finer.

“It is seldom that his figures do not express the character he intended to give them. When they wanted an illustration that colours could not bestow, collateral circumstances, full of wit, supply notes. The nobleman in *Marriage A-la-mode* has a great air—the coronet on his crutches, and his pedigree issuing out of the bowels of William the Conqueror, add to his character. In the *Breakfast* the old steward reflects for the spectator. Sometimes a short label is an epigram, and is never introduced without improving the subject. Unfortunately some circumstances, that were temporary, will be lost to posterity, the fate of all comic authors; and if ever an author wanted a commentary, that none of his beauties might be lost, it is Hogarth—not from being obscure (for he never was that but in two or three of his first prints, where transient national follies, as lotteries, free-masonry, and the South-sea, were his topics), but for the use of foreigners, and from a multiplicity of little incidents, not essential to, but always heightening, the principal action. Such is the spider’s-web extended over the poor’s box in a parish-church; the blunders in architecture in the nobleman’s seat seen through the window, in the first print of *Marriage A-la-mode*; and a thousand in the *Strollers* dressing in a Barn, which for wit and imagination, without any other end, I think the best of all his works; as for useful and deep satire, that on the Methodists is the most sublime. The scenes of Bedlam and the Gaming-house are inimitable representations of our serious follies or unavoidable woes; and the concern shewn by the lord-mayor, when the companion of his childhood is brought before him as a criminal, is a touching picture, and big with humane admonition and reflection.

“Another instance of this author’s genius, is his not condescending to explain his moral lessons by the trite poverty of allegory. If he had an emblematic thought, he expressed it with wit, rather than by a symbol. Such is that of the whore setting fire to the world in the *Rake’s Progress*. Once indeed he descended to use an allegoric personage, and was not happy in it; in one of his election prints *Britannia’s* chariot breaks down while the coachman and footman are playing at cards on the box. Sometimes too, to please his vulgar customers, he stooped to low images and national satire, as in the two prints of *France and England*, and that of the *Gates of Calais*. The last indeed has great merit, though the caricatura is carried to excess. In all these the painter’s purpose was to make his countrymen observe the ease and affluence of a free government, opposed to the wants and woes of slaves. In *Beer-street* the English butcher tossing a Frenchman in the air with one hand, is absolute hyperbole; and what is worse, was an after-thought, not being in the first edition. The *Gin-alley* is much superior, horribly fine, but disgusting.

“His *Bartholomew-fair* is full of humour; the *March to Finchley*, of nature; the *Enraged Musician* tends to farce. The *Four Parts of the Day*, except the last, are inferior to few of his works. The *Sleeping Congregation*, the *Lecture on the Vacuum*, the *Laughing Audience*, the *Consultation of Physicians* as a coat of arms, and the *Cockpit*, are perfect in their several kinds. The prints of *Industry and Idleness* have more merit in the intention than execution.

“Towards his latter end he now and then repeated himself, but seldom more than most great authors who executed so much.

“It may appear singular, that of an author whom I call comic, and who is so celebrated for his humour, I should speak in general in so serious a style; but it would be suppressing the merits of his heart to consider him only as a promoter of laughter. I think I have shewn that his views were more generous and extensive. Mirth coloured his pictures, but benevolence designed them. He smiled like Socrates; that men might not be offended at his lectures, and might learn to laugh at their own follies. When his topics were harmless, all his touches were marked with pleasantry and fun. He never laughed, like Rabelais, at nonsense that he imposed for wit; but, like Swift, combined incidents that divert one from their unexpected encounter, and illustrate the talé he means to tell. Such are the hens roosting on the upright waves in the scene of the *Strollers*, and the devils drinking porter on the altar. The manners or *costume* are more than observed in every one of his works. The very furniture of his rooms describe the characters of the persons to whom they belong; a lesson that might be of use to comic authors. It was reserved to Hogarth to write a scene of furniture. The rake’s levee-room, the nobleman’s dining-room, the apartments of the husband and wife in *Marriage A-la-mode*, the alderman’s parlour, the post’s bed-chamber, and many others, are the history of the manners of the age.

“But perhaps too much has been said of this great genius as an author; it is time to speak of him as a painter, and to mention the circumstances of his life, in both which I shall be more brief. His works are his history.

“His apprenticeship was no sooner expired, than he studied drawing from the life, in which he never attained to great excellence. It was character, the passions, the soul, that his genius was given him to copy: his force lay in expression, not in tints and chiaro-scuro. At first he worked for booksellers, and designed and engraved plates for several books; and, which is extraordinary, no symptom of genius dawned in those plates. His *Hudibras* was the first of his works that marked him as a man above the common; yet what made him then noticed, now surprises us to find so little humour in an undertaking so congenial to his talents. On the success however of those plates he commenced painter, a painter of portraits; the most ill-suited employment imaginable to a man whose turn certainly was not flattery, nor his talent adapted to look on vanity without a sneer. Yet his facility in catching a likeness, and the method he chose of painting families and conversations in small, then a novelty, drew him prodigious business for some time. It did not last, either from his applying to the real bent of his disposition, or from his customers apprehending that a satirist was too formidable a confessor for the devotees of self-love.

“His *Midnight Modern Conversation* was the first work that shewed his command of character: but it was the *Harlot’s Progress*, published in 1729 or 1730, that established his fame. The pictures were scarce finished, and no sooner exhibited to the public, and the subscription opened, than above twelve hundred names were entered on his book.

book. The familiarity of the subject, and the propriety of the execution, made it tasted by all ranks of people. Every engraver set himself to copy it, and thousands of imitations were dispersed all over the kingdom. It was made into a pantomime, and performed on the stage. The Rake's Progress, perhaps superior, had not so much success, from want of novelty; nor indeed is the print of the Arrest equal in merit to the others.

"The curtain was now drawn aside, and his genius stood displayed in its full lustre. From time to time he continued to give those works that should be immortal, if the nature of his art will allow it. Even the receipts for his subscriptions had wit in them. Many of his plates he engraved himself, and often expunged faces etched by his assistants when they had not done justice to his ideas.

"Not content with shining in a path untrodden before, he was ambitious of distinguishing himself as a painter of his history. But the genius that had entered so feelingly into the calamities and crimes of familiar life, deserted him in a walk that called for dignity and grace. The burlesque turn of his mind mixed itself with the most serious subjects. In his Danaë the old nurse tries a coin of the golden shower with her teeth, to see if it is true gold: in the Pool of Bethesda, a servant of a rich ulcerated lady beats back a poor man that sought the same celestial remedy. Both circumstances are justly thought, but rather too ludicrous. It is a much more capital fault that Danaë herself is a mere nymph of Drury. He seems to have conceived no higher idea of beauty.

"So little had he eyes to his own deficiencies, that he believed he had discovered the principle of grace. With the enthusiasm of a discoverer, he cried, Eureka! This was his famous line of beauty, the ground-work of his Analysis, a book that has many sensible hints and observations, but that did not carry the conviction, nor meet the universal acquiescence he expected.

"He fell afterwards into a grosser mistake. From a contempt of the ignorant virtuosi of the age, and from indignation at the impudent tricks of picture-dealers, whom he saw continually recommending and vending vile copies to bubble-collectors, and from having never studied, indeed having seen, few good pictures of the great Italian masters, he persuaded himself that the praises bestowed on those glorious works were nothing but the effects of prejudice. He talked this language till he believed it; and having heard it often asserted, as is true that time gives a mellowness to colours and improves them, he not only denied the proposition, but maintained that pictures only grew black and worse by age, not distinguishing between the degrees in which the proposition might be true or false. He went farther; he determined to rival the ancients—and, unfortunately, chose one of the finest pictures in England as the object of his competition. This was the celebrated Sigismonda of sir Luke Schaub, now in the possession of the duke of Newcastle, said to be painted by Correggio, probably by Furnio, but no matter by whom. It is impossible to see the picture, or read Dryden's inimitable tale, and not feel that the same soul animated both. After many essays, Hogarth at last produced his Sigismonda—but no more like Sigismonda, than I to Hercules. None of the sober grief, no dignity of suppressed anguish, no involuntary tear, no settled meditation on the fate he meant to meet, no amorous warmth turned holy by despair; in short, all was wanting that should have been there. He set the price of 400*l.* on it, and had it returned on his hands by the person for whom it was painted. He took subscriptions for a plate of it, but had the sense at last to suppress it. I make no more apology for this account than for the encomiums I have bestowed on him. Both are dictated by truth, and are the history of a

great man's excellencies and errors. Milton, it is said preferred his Paradise Regained to his immortal poem.

"The last memorable event of our artist's life was his quarrel with Mr. Wilkes, in which, if Mr. Hogarth did not commence direct hostilities on the latter, he at least obliquely gave the first offence, by an attack on the friends and party of that gentleman. This conduct was the more surprising, as he had all his life avoided dipping his pencil in political contests, and had early refused a very lucrative offer that was made to engage him in a set of prints against the head of a court-party. Without entering into the merits of the cause, I shall only state the fact. In September 1762 Mr. Hogarth published his print of the Times. It was answered by Mr. Wilkes in a severe North-Briton. On this the painter exhibited the caricature of the writer. Mr. Churchill, the poet, then engaged in the war, and wrote his epistle to Hogarth, not the brightest of his works, and in which the severest strokes fell on a defect that the painter had neither caused nor could amend—his age; and which, however, was neither remarkable nor decrepit; much less had it impaired his talents, as appeared by his having composed but six months before one of his most capital works, the satire on the Methodists. In revenge for this epistle, Hogarth caricatured Churchill under the form of a canonical bear, with a club and a pot of porter—*et vitulâ, tu dignus et hic*—never did two angry men of their abilities throw mud with less dexterity.

"He sold about twenty-four of his principal pictures by auction in 1745. Mr. Vincent Bourne addressed a copy of Latin hendecasyllables to him on his chief pictures; and Roquet, the enameller, published a French explanation, though a superficial one, of many of his prints, which it was said, he had drawn up for the use of marshal Belleisle, then a prisoner in England."

HOGBO, in *Geography*, a town of Sweden, in the province of Gestrícia; 9 miles W. of Gessle.

HOGDAL OSVER, a town of Sweden, in Harjedalen; 76 miles N.W. of Hudwicksfall.

HOGDAL, *Utter*, a town of Sweden, in Helsingland; 70 miles N.W. Hudwicksfall.

HOGDEN, a small island in the gulf of Finland. N. lat. 59° 33'. E. long. 26° 40'.

HOGENHINE, HOGENHEYNE, or rather *Agenbine*, *q. d.* own servant. See *THIRD night awn hind*.

HOGENPOUR, in *Geography*, a town of Hindoostan, in Bednore.

HOGERUS, in *Biography*, an abbot, who is said to be the author of a curious MS. treatise on music, N° CCLX, in the library of Bene't college, Cambridge; where it is entitled "Musica Hogeri, five Excerptiones Hogeri Abbatis ex Autoribus Musicæ Artis:" "The Music of Hogerus, or Extracts from Writers on the Art of Music, by the Abbot Hogerus." Who this abbot was, or when he lived, will not now be easily discovered. His name has long puzzled the learned: and we find, among the letters of Baptista Doni, that this MS. was a subject of a correspondence between him and Dr. Thomas Rigel, of London, in the year 1639. Doni, who had emissaries at this time all over Europe, in search of musical curiosities, upon hearing of this extraordinary MS. in his letter to Dr. Rigel concerning it, says "De Hogerii abbatis excerptis (siquidem exstarent) brevia quædam specimina dumtaxat cuperem: quum enim autor sit mihi plane ignotus, affirmare non ausim, an talia sint ejus scripta, ut totus scribi mereatur."—The doctor, in his reply to Doni, the same year, tells him, that after making all possible inquiry in the library at Cambridge—"Nullum Hogerii scriptum in ea bibliotheca inveniri." Whether this

was true, or only a short way of getting rid of the trouble incident to such inquiries, we know not; but we find the book entered in the catalogue that goes under the name of Dr. Gale, thus: "Excerptiones Rogeri Baconi ex auctoribus Musicæ Artis." It is possible that this book may have been transcribed by, or for, this powerful man; and it is the more possible, as he admitted music among his studies, and is said, by his biographers, to have written "De valore Musices, pr. Secundum Boetium et cæteros auctores." However this may have been, the MS. which is beautifully written on vellum, and extremely well preserved, contains more than it promises; for the two musical treatises of Hubald and Odo, both written in the tenth century, are not given in fragments or abstracts, but entire, and unmixed with the writings of any other authors. See HUBALD and ODO.

HOGGENBERG, in *Geography*, a town of Austria; 12 miles S.W. Freytladt.

HOGGEREL, a name that signifies the same thing with *hog-sheep*, in particular districts.

HOGGET, or HOGREL, is a young boar of the second year.

HOGGIT denotes the male or wedder sheep, from the period of taking it from the ewe, to the time of its attaining the age of one year.

HOGI, in the *Eastern Churches*, as at Cairo, is an under attendant on the mosque, who is the reader under the sheik.

HOGKNE, in *Geography*, a town of Asiatic Turkey, in the government of Mosul; 32 miles W. of Mosul.

HOGLAND, a town of Norway, in the diocese of Aggerhuus; 32 miles N. of Frederickstall.

HOGOE, properly *Haut-Gout*, a mess in cookery, so denominated from its high flavour, or relish.

HOGOLIN, or HOGOLEU, in *Geography*, one of the Caroline islands, or New Philippines; about 90 British miles in length, by 40 in breadth.

HOGSBY, a town of Sweden, in the province of Sma-land; 33 miles N. of Calmar.

HOGSHEAD, a measure of capacity, and is of several kinds, *viz.*

HOGSHEAD of *Ale or Beer*, in the country, is 51 ale gallons = 204 ale quarts = 408 ale pints = $1\frac{1}{2}$ barrel = 3 country kilderkins = 6 country firkins = $\frac{1}{2}$ ths, or .9444 London beer hogheads = $\frac{1}{2}$ ths, or 1.0625 London ale hogheads = .9825 wine hogheads = 14382 cubic inches = 8.32291 cubic feet = .30568 cubic yards = 28.9616 cubic links.

HOGSHEAD of *Ale*, in London, is 48 ale gallons = 192 ale quarts = 384 ale pints = $1\frac{1}{2}$ London ale barrel = 3 London ale kilderkins = 6 London ale firkins = $\frac{1}{2}$ ths, or .941176 country ale or beer hogheads = $\frac{3}{4}$ ths, or .8888 London beer hogheads = .930117 wine hogheads = 13536 cubic inches = $7\frac{1}{2}$ ths, or 7.8333 cubic feet = .290123 cubic yards = 27.25804 cubic links.

HOGSHEAD of *Beer*, in London, is 54 ale gallons = 216 ale quarts = 432 ale pints = $1\frac{1}{2}$ London beer barrel = 3 London beer kilderkins = 6 London beer firkins = $\frac{2}{3}$ ths, or 1.125 London ale hogheads = $\frac{1}{2}$ ths, or 1.058824 country ale or beer hogheads = 1.04638 wine hogheads = 15228 cubic inches = 8.8125 cubic feet = .32638 cubic yards = 30.66526 cubic links.

HOGSHEAD of *Wine, Cyder, Mead, Metbeglin, Olives, &c.* (5 Ann.) is 63 wine gallons = 252 wine quarts = 504 wine pints = 2016 wine gills = $1\frac{1}{2}$ tierce = 2 wine barrels = $3\frac{1}{2}$ rundlets = 1.011649 country ale or beer hogheads = 1.07513 London ale hogheads = .955673 London beer

hogheads = 14553 cubic inches = 8.4219 cubic feet = .311921 cubic yards = 29.30601 cubic links.

HOGSHEAD of *Water*, in *Engineering*, according to Beighton, Harris (Lexicon Tech. Measures and Smeaton's Rep. vol. i. p. 214.) is 63 ale gallons = 17766 cubic inches = 10.28125 cubic feet = $\frac{2}{3}$ ths London beer hogheads = 35.76137 cubic links: but, according to Mr. Smeaton, (Reports, vol. i. p. 245, 247, &c.) it is 52 ale gallons = 14664 cubic inches = 8.4861 cubic feet = 29.51732 cubic links. Dr. Defaguliers used the London beer hoghead of 54 gallons in his experiments on pumping.

HOGSHEAD of *Lime* in Somersetshire, is five heaped bushels or bags, (see Bath Soc. Papers, vol. x. p. 58.) = .078125 carriages.

HOGSIO, in *Geography*, a town of Sweden, in the province of Angermanland; 14 miles N.N.W. of Hernofand.

HOGSTA, a town of Sweden, in the province of Up-land; 7 miles N. of Upsal.

HOGSTIES, one of the small Bahama islands, surrounded with rocks. N. lat. $21^{\circ} 40'$. W. long. $73^{\circ} 50'$.

HOGSUND, a town of Norway, in the province of Aggerhuus; 23 miles S.W. of Christiania.

HOGUE, LA, a town of France, in the department of the Channel; opposite to which was fought, in 1692, the battle of la Hogue, in which the English fleet, under admiral Ruffel, obtained a glorious victory over the French, and 15 French men of war were taken, burned, or destroyed; 5 miles S. of Barfeur. N. lat. $49^{\circ} 35'$. W. long. $1^{\circ} 11'$.

HOGUE, *Belle*, a cape on the N. coast of the island of Jersey; 5 miles N. of St. Helier.

HOGWALTA, a town of Sweden, in Warmeland; 30 miles N.W. of Carlstadt.

HOHENBERG, a county and principality of Germany, situated between Wurtemberg and the Austrian Brisgaw. It is divided into Upper and Lower counties, lying at some distance from each other. The chief towns are Rotenburg, Ehingen, Hord, and Schramberg.—Also, a town of Germany, in the principality of Bayreuth; 10 miles E.N.E. of Wunsiedel.—Also, a town of the bishopric of Bamberg; 5 miles E.N.E. of Kupferberg.

HOHENBURG, a town of Austria, on the river Trafsen; 20 miles W. of Ebenfurth.

HOHENECK, a town and castle of Germany, in the principality of Bayreuth; 14 miles N. of Anspach.

HOHEN-ELB, a town of Bohemia, in the circle of Konigingratz; 23 miles N. of Konigingratz. N. lat. $50^{\circ} 30'$. E. long. $15^{\circ} 30'$.

HOHENEMBS, a county and principality situated to the S. of the lake of Constance.

HOHENESTED, a town of the duchy of Holstein; 10 miles S.W. of Nordtorp.

HOHENFELS, a town of Bavaria, in the lordship of Brieteneck; 17 miles N.N.W. of Ratibon.

HOHEN-FREDEBERG, a town of Silesia, in the province of Schweidnitz; 5 miles N.N.W. of Freyburg.

HOHENFURT, a town of Bohemia, on the Molda; 4 miles S.S.W. of Rosenber.

HOHEN-LIMBURG, a town of Germany, in the county of Mark; 9 miles S. of Schwiert.

HOHENLOE, or HOLACH, a county and principality of Germany, W. of the marggrate of Anspach, about 26 miles from N. to S. and 23 from E. to W.; consisting of mountains, vallies, and plains. The southern parts abound with vineyards, and the northern are cultivated for corn: the vallies have excellent meadows and pasture land, which feed great numbers of a valuable kind of cattle: and the mountains are clothed with oak, fir, pine, beech, and birch; and supply

supply plenty of game. The inhabitants are chiefly Lutherans, intermixed with some Roman Catholics.

HOHENMAUT, or WISSOKY-MEYTO, a town of Bohemia, in the circle of Chrudim, with a small territory annexed; 14 miles E. of Chrudim. N. lat. $49^{\circ} 54'$. E. long. $15^{\circ} 56'$.

HOHENSCHAU, a town and castle of Bavaria, near which are iron mines and forges; 70 miles W. of Salzburg.

HOHEN-SOLMS, a town of Germany, whence a branch of the family of Solms derives the title of count, situated in a valley near a high mountain, and inhabited by Calvinists, though the surrounding villages are occupied by Lutherans; 5 miles N.N.E. of Wetzlar. N. lat. $50^{\circ} 38'$. E. long. $8^{\circ} 35'$.

HOHENSTADT, or ZABRECH, a town of Moravia, in the circle of Olmutz; 24 miles N.W. of Olmutz. N. lat. $49^{\circ} 49'$. E. long. $61^{\circ} 41'$.

HOHENSTEIN, a town of Prussia, in the province of Oberland, with a castle. N. lat. $53^{\circ} 27'$. E. long. $20^{\circ} 15'$. —Also, a town of Saxony, in the marggravate of Meissen; 9 miles E.N.E. of Pirna. N. lat. $50^{\circ} 56'$. E. long. $14^{\circ} 10'$.

HOHENWART, a town of Bavaria; 9 miles S. of Ingolstadt.

HOHENZOLLERN, a principality of Germany, divided into three branches, viz. Hohenzollern, Hechingen, and Hohenzollern Sigmaringen: each prince having a revenue of about 30,000 florins.

HOHNSTEIN, a county of Westphalia, situated in Thuringia.

HOIET, a small island in the East Indian sea, near the coast of Queda. N. lat. $6^{\circ} 36'$. E. long. $99^{\circ} 47'$.

HOJILAMSA, a town on the E. coast of the island of Celebes. N. lat. $0^{\circ} 51'$. E. long. $124^{\circ} 59'$.

HOIN, a town of Persia, in the province of Adirbeitzan; 42 miles S.S.E. of Ardebil.

HOIS'T, in *Sea Language*, denotes the perpendicular height of a flag or ensign, as opposed to the *fly*, which signifies its breadth from the staff to the outer edge.

HOISTING signifies the operation of drawing up any body by the assistance of one or more tackles. Hoisting is never applied to the act of pulling up any body by the help of a single block, except in the exercise of extending the sails, by drawing them upwards along the mast or stays, to which it is invariably applied.

HOISTING *Jack*, in *Mechanics*, is a machine used for raising large weights to small heights, under which they can be placed. They are of two kinds; one in which a rack is pushed upwards by means of a pinion and winch-handle, and wheels, when great power is required; and others, in which a screw is moved upwards by means of a revolving nut, turned by a lever. In the Repository of the Society of Arts in the Adelphi, two models of hoisting-jacks are preserved for public inspection, viz. Mr. Abraham Staghould's, class iv. N^o 47, described in *Trans. Soc. Arts*, vol. i. p. 319, and Bailey's Machines, vol. i. 168; and Mr. William Moccock's class iv. N^o 116. vol. vii. 239. and vol. viii. p. 179. See JACK.

HOISTING *Tackle*, is an ingenious and very effective way of raising weights, lately introduced very extensively by Mr. Simeon Thompson, who has a patent for its application.

HOITLALLOTL, in *Ornithology*, the courier pheasant of Latham. See PHASIANUS *Mexicanus*.

HOITLING, in *Ichthyology*. See GADUS *Merlangus*.

HOITZANATL, in *Ornithology*. See CORVUS *Mexicanus*.

HOITZITLIN. See CERTHIA *Carulea*, and CERTHIA *Mexicana*.

HOITZTLACUATZIN, in *Zoology*. See HYSTRIX *Prehensilis*.

HOIZITILTOTOTL, in *Ornithology*. See TROCHILUS *Punctulatus*.

HOKE-DAY, HOCK-DAY, or *Hock-Tuesday*, in our *Ancient Customs*, (*Dies Martis, quæ quindenam Paschæ vocant*), the second Tuesday after Easter week: a solemn festival celebrated for many ages in England, in memory of the great slaughter of the Danes in the time of king Ethelred II. in 1002; they having been, in that reign, almost all destroyed in one day in the different parts of the kingdom, and that principally by women. Mr. Bryant apprehends, that a holiday could not have been instituted for the commemoration of so cruel an event, which afforded matter for humiliation and sorrow rather than of festivity and mirth. Others have, therefore, thought that Hoke-day alluded to the death of Hardicanute, the last monarch of the Danish race, at a marriage-feast in Lambeth, on the 8th of June, 1042; by whose death, the English were for ever released from the wanton insults and boundless exactions of him and his countrymen. (See a Memoir on Hoke-day, by the Rev. Mr. Denne, in the *Archæologia*, vol. vii. p. 244.) This is still kept up in some counties, and the women bear the principal sway in it, stopping all passengers with ropes and chains, and exacting some small matter from them to make merry with. This day was very remarkable in former times, inasmuch as to be used on the same footing with Michaelmas, for a general term or time of account. We find leases without date, reserving so much rent payable *ad duos anni terminos, scil. ad le hoke-day, et ad festum sancti Michaelis*. In the accounts of Magdalen college, Oxford, there is yearly an allowance, *pro mulieribus hockantibus*, of some manors of theirs in Hampshire; where the men *hock* the women on Mondays, and the women *hock* them on Tuesdays. The meaning of it is, that, on that day, the women in merriment stopped the way with ropes, and pulled passengers to them, desiring something to be laid out for pious uses.

HOKE-DAY *Money*, or *Hoke-Tuesday Money*, a tribute anciently paid the landlord for giving his tenants and bondmen leave to celebrate hock-day, or hoke-day, in memory of the expulsion of the domineering Danes.

HOKE-NORTON, in *Geography*, a village of England, in the county of Oxford, where the Danes were defeated by the Saxons, under Edward the Elder, about the year 914. Vestiges of the camps are yet visible; 5 miles N.N.E. of Clipping Norton.

HO-KIEN, a city of China, of the first rank, in the province of Pe-tcheli, situated between two rivers abounding in fish, and remarkable for the neatness of its streets. It has under its jurisdiction two cities of the second, and fifteen of the third class; 87 miles S. of Peking. N. lat. $38^{\circ} 28'$. E. long. $115^{\circ} 43'$.

HOLAIVA, or HOOLAIVA, one of the Hapaaë islands, in the South Pacific ocean, uncultivated and uninhabited when Capt. Cook visited it in 1777, except by one man employed in catching fish and turtle. The trees and plants are similar to those of Lefooga, to which it is joined by a reef that is dry at low water; 30 miles N.N.E. of Annamooka. N. lat. $19^{\circ} 52'$. E. long. $185^{\circ} 36'$.

HOLAMIN, a small island of Scotland, near the S.W. coast of Mull. N. lat. $59^{\circ} 19'$. W. long. $61^{\circ} 21'$.

HOLANDS, a town of Norway, in the diocese of Christianland; 8 miles S. of Stavanger.

HOLAR.

HOLARRHENA, in *Botany*, from ὅλος, *entire*, or *solid*, and ἀνήρ, *a male*; apparently alluding to the anthers being entirely filled with pollen, and unaccompanied by superfluous appendages. Brown Apocin. (from Tr. of the Wernerian Soc. v. i.) p. 51.—Class and order, *Pentandria Digynia*. Nat. Ord. *Contorta*, Linn. *Apocinea*, Juss. Brown.

Ess. Ch. Corolla falver-shaped, with equi-lateral segments; its orifice and tube destitute of scales. Stamens inclosed in the tube, and inserted into its base; anthers unconnected with the stigma, lanceolate, entire, curving lengthwise. Germens two; style very short; stigma common, cylindrical. No scales at the base of the germens. Follicles slender.

This genus consists of two species, natives of Ceylon or other parts of the East Indies. One of them is *Carissa mitis*, Vahl. Symb. fasc. 3. 44, so named originally by Koenig, from whom there is a specimen in the Banksian herbarium. They are upright smooth shrubs, with membranous leaves. The flowers grow in terminal and lateral cymes.

HOLBEACH, in *Geography*, is an ancient market-town, and parish in the wapentake of Elloe, Holland division of Lincolnshire, England. It is situated in the Fens; and very indifferently built. A grant of a weekly market and an annual fair was obtained from Henry III. by Thomas de Malton, lord Egremont, about the middle of the thirteenth century; when a stone cross was erected in the market-place. The chief building in Holbeach is the church, which is a large handsome structure; and consists of a nave, chancel, aisles, porch, and square tower, with an octangular ornamental spire. The north porch has two circular towers, with embattled parapets, at its extreme angles. The church contains some fine monuments. An hospital was established and endowed in this town by sir John de Kirton, knt. about the year 1350, for the support of a warden, chaplain, and fourteen pensioners. A free grammar-school was also founded here about the same time by a licence from king Edward III., who granted certain lands for its support. Another free-school was established here about the year 1670, by George Farmer, esq. and the revenues for its support have been much increased by subsequent donations and bequests. Holbeach is 106 miles distant from London, and contains 556 houses, occupied by 2683 persons. This town has derived some honour from two eminent natives; Henry de Rands, called, from the place of his birth, Holbech, who was bishop of Lincoln in the reign of Edward VI.; and Dr. William Stukeley, whose name and memory are respected by every admirer of English antiquities.

The village of Gedney, a mile and half distant from Holbeach, is worthy notice for the lightness of its church, which has fifty-three windows; in those of the north aisle are considerable remains of fine painted glass. Beauties of England, vol. ix.

HOLBECK, a sea-port town of Denmark, in the island of Zealand, situated in the gulf of Helsingør, with a good harbour, whence considerable quantities of corn are annually exported; 30 miles W. from Copenhagen. N. lat. 55° 42'. E. long. 11° 44'.

HOLBEIN, JOHN, or **HANS**, in *Biography*. This admirable painter was born at Basse in 1498, and instructed in the art by his father John Holbein. In the early part of his life he pursued his studies with incessant assiduity; and being possessed of an elevated genius, his progress was exceedingly rapid, so that he soon became far superior to his instructor. He excelled all his contemporaries in portrait; and in that style arrived at so high a degree of perfection, that Zuccherò, who certainly was well qualified to judge of his merit,

did not hesitate to compare his portraits with those of Raphael and Titian.

He painted equally well in oil, water-colours, and distemper, in large and in miniature; but he had never practised the art of painting in miniature, till he resided in England, and learned it from Lucas Cornelii; though he afterwards carried it to its highest perfection. His paintings of that kind have all the force of oil-colours, and are finished with the utmost delicacy. In general he painted on a green ground, but in his small pictures frequently he painted on a blue.

The invention of Holbein was surprisingly fruitful, and often poetical; his execution was remarkably quick, and his application indefatigable. His pencil was exceedingly delicate; his colouring had a wonderful degree of force; he finished his pictures with exquisite neatness; and his carnations were life itself. His genuine works are always distinguishable by the true, round, lively imitation of flesh, visible in all his portraits, and also by the amazing delicacy of his finishing.

He visited London at the request of Erasmus, who recommended him to sir Thomas More; and sir Thomas immediately employed him, shewed him every mark of respect and real friendship, entertained him at his own table, allowed him an apartment in his house, and detained him for three years. In which time he painted the portraits of his patron, and all the family of sir Thomas; as also several portraits of his relations and friends, which were hung up in a grand hall. As soon as king Henry VIII. beheld those performances, he was so struck with their beauty, their life, and admirable likeness, that he took Holbein into his service, and favoured him highly as long as he lived.

It is observed by most authors, that Holbein always painted with his left hand; though one modern writer objects against that tradition, (what he considers as a proof,) that in a portrait of Holbein painted by himself, which was in the Arundelian collection, he is represented holding the pencil in the right hand. But, with great deference to the opinion of that ingenious connoisseur, that evidence cannot be sufficient to set aside so general a testimony of the most authentic writers on this subject; because, although habit and practice might enable him to handle the pencil familiarly with his left hand, yet, as it is so unusual, it must have had but an unseemly and awkward appearance in a picture; which probably might have been his real inducement for representing himself without such a particularity. Besides, the writer of Holbein's life, at the end of the treatise by De Piles, mentions a print by Hollar, still extant, which describes Holbein drawing with his left hand. Nor is it so extraordinary or incredible a circumstance; for other artists, mentioned in this volume, are remarked for the very same habit; particularly Mozzo of Antwerp, who worked with the left; and Amico Aspertino, as well as Ludovico Cangiagio, who worked equally well with both hands.

The genius and excellence of this master were sufficiently shewn in the historical style, by two celebrated compositions which he painted in the hall of the Steel-yard company; and they were universally admired for the richness of the colouring, as also for the strong character in the figures through the whole. Zuccherò, on seeing those pictures, expressed the highest esteem for Holbein, and even copied them in Indian ink.

Holbein undoubtedly had many excellencies, which procured him, very deservedly, the admiration of all Europe; but to equal him in portrait with Raphael and Titian, as Zuccherò did, or to place him on an equality with the best

of Raphael's disciples in composition, as Abbé du Bos has done, seems to be not altogether justifiable; for, notwithstanding the abundant merit of this master in many respects, it cannot be denied that the German taste predominates through most, if not all, of his compositions.

It is indeed to be lamented, that such a number of pictures are positively asserted to be of the hand of Holbein, which are a dishonour to his pencil; but any judicious person, who hath observed one genuine picture, will not easily be imposed on.

In the Florentine collection are the portraits of Holbein, Luther, sir Thomas More, and Richard Southwell, all painted by this master; and in the cabinet of the king of France, besides several portraits, there is an historical subject by Holbein, representing the "Sacrifice of Abraham," which is accounted a fine performance. He died in 1554, aged 56.

HOLBORNE ISLE, in *Geography*, a small island near the N.E. coast of New Holland; 20 miles N.W. of cape Gloucester.

HOLBERG, LOUIS, Baron Von, in *Biography*, a celebrated Danish writer, was born at Bergen, in Norway, about the year 1685. Owing to the early death of his parents, who had brought up a numerous family very respectably, he first went into the army, and then discovering an attachment to learning, he was put under the care of a private tutor by a near relation. The straightness of his own, and likewise of his friends' circumstances, was the cause of the many vicissitudes which he experienced before he had attained to man's estate. At length he completed his studies at Copenhagen, and then returned to his native place, where he became private tutor in the family of the suffragan of the bishop of Bergen. His temper was ill adapted to the situation, and in a few weeks he collected what money he was able to procure and set off for Holland. His resources were soon exhausted, and he was glad to return, directing his course to Christianland, where he obtained a living by teaching the languages. After this he went to England; and at Oxford his skill in music and the learned tongues obtained for him many pupils. His love of change had hitherto kept him in a state of poverty, and though he had many good offers, some of which he accepted, yet he never staid long enough in one place to benefit by them. He dedicated his "Introduction to the Modern History of France" to Frederic IV. which procured for him the place of an extraordinary professor at Copenhagen, which he had a very short time, when he travelled, by the way of the Netherlands, into France. After a considerable stay at Paris he went to Rome, where he spent a winter, and then returned to the French capital by way of Florence, Bologna, Turin, and Lyons. He next went to Copenhagen, where he published, in the Danish language, "An Introduction to the Law of Nature and Nations." After this he obtained an appointment which raised him above poverty, being made professor of metaphysics, though, according to his own account of the matter, it was one of the subjects with which he was least acquainted. This promotion was followed by a place in the consistory, which gave him a higher rank, and made a farther addition to his income. His reputation as a writer being established, he frequently appeared before the world as an author, and in 1735 he became rector of the university of Copenhagen, and in two years after he was entrusted with the management of its finances. While at the head of the university, he exerted himself to promote the interests of learning, and gave prizes to those students who excelled in the different branches of literature. He was a successful author, and obtaining much property by his literary labours,

he purchased an estate in Iceland, and at his death, which happened in 1754, he bequeathed a large sum of money to the academy of Soroe in Iceland, for the purpose of educating young nobility, on which account his memory has been celebrated by an annual oration: He settled also 16,000 dollars, the interest of which was to be employed in providing establishments for young women at Copenhagen. Holberg possessed a strong turn for satire and ridicule, of which he gave an admirable specimen in "Klimm's Subterranean Travels, containing a new Theory of the Earth, with a Description of the Fifth Monarchy, which hitherto has been totally unknown." This work has gone through many editions, and been translated into different languages. It is thus described by one of the translators: "Holberg's acuteness in discovering the imperfections of most governments, the instructive manner in which he criticises, and which evidently display a philosophical mind and depth of judgment; his accurate spirit of observation; his lively ridicule which, for the most part, is under the veil of philanthropy and naiveté, together with the elegance of the style, not only obtained a favourable reception to this work on its first appearance, but will secure it for ages. On account of the romantic event it records, it may be classed with Lucian's "True History," or "Gulliver's Travels;" but it exceeds both in variety of matter, as well as in delicacy of satire. Lucian only laughs, and Swift is too bitter, whereas Holberg steers a middle course between both." In his country baron Holberg is principally known by his "Introduction to Universal History," which was translated many years since by Dr. Gregory Sharpe; and a new edition of this work was given to the public in 1787, by William Radcliffe, A.B. Of the baron Dr. Sharpe says, "he was author of many works in prose and verse, almost all of them written in the Danish language. He wrote 25 plays, a metamorphosis, the reverse of Ovid's, relating the change of flowers, trees, and animals into men; he was the author of several satires in verse; of the entertaining voyage under ground of Klimms, in Latin, called *Iter Subterraneum*; of some epigrams; of his own life; of an excellent ecclesiastical history; another of the Danes, and one of the Jews, with several moral, historical, and other pieces; and he was always infirm and studious, had travelled much, and loved and imitated the manners of the English." See Dr. Sharpe's preface to the Introduction to Universal History.

HOLBOURN HEAD, in *Geography*, a cape of Scotland, on the N. coast of the county of Caithness. N. lat. 58° 39'. W. long. 3° 20'.

HOLCE, ὄλκερ, a word used by some of the Greek authors, as the name of a dram weight; and by others, as Dioscorides, &c. to signify a weight in general.

HOLCOMBE, HENRY, in *Biography*, was a chorister in the cathedral of Salisbury, and having a very fine treble voice, was sent for up to London, to perform in the first attempts at operas on the Italian model. In "Camilla," he performed the part of Prenesto; and being very young at that time, is called, in the printed copy of the music, *the boy*. In Rosamond, he performed the part of the page, under the same title. His voice breaking, he soon after quitted the stage, and became a music-master. He had many scholars, particularly in singing; for which, from constantly frequenting the opera, after he had ceased to perform there, and hearing all the great singers from Valentini and Nicolini, to Senelino and Farinelli, he must have been well qualified, and we have been assured by very good judges, who had often heard him sing in private, that his taste was perfectly Italian.

One song only of his composition, "Happy hours, all hours excelling," is printed in the Musical Miscellany.

But his elegant ballad of "Arno's Vale," written on the death of Gaston, the last duke of Tuscany, of the house of Medici, by Charles earl of Middlesex, afterwards duke of Dorset, and addressed to his favourite, the Muscovita, a singer, was afterwards in great favour, and printed in a collection of twelve songs set by Holcombe, and published a short time before his death, which happened about the year 1750.

HOLCUS, in *Botany*, a name in Pliny, ἄλκος of the Greeks, and by the ancients understood as a kind of wild barley, with awns, growing in dry stony places. Professor Martyn deduces it from ἄλκος, a *furrow*, but we do not find this etymology, nor any other that has fallen in our way, satisfactory. The name, as applied by Linnæus, embraces a heterogeneous assemblage, in which is the *Sorghum* of the ancients; but some species have of late been removed from it; (see *HIEROCILLOE*.) Mr. Brown, in his *Prodr. Nov. Holl.*, wishes to confine the genus nearly to that peculiar tribe to which the *Sorghum* belongs, and which is well illustrated by Mieg in the *Acta Helvetica*, v. 8. 114. t. 8, this last-named author expressing a desire that such might be separated, under the name of *Sorghum*, as a distinct genus from the *Holcus* of Linnæus. To this we gladly assent, and then perhaps our English species, *mollis*, *lanatus*, and *avenaceus*, may serve as the basis of *Holcus*, for we cannot agree with Haller and Mieg to refer the two first, any more than the last, to *Avena*. In pursuance of this plan, we shall for the present put aside *Sorghum*, for the consideration of ourselves or our successors in its proper place. The following therefore will be the characters and synonyms of our *Holcus*.—*Sm. Fl. Brit.* 88. *Engl. Bot.* t. 1169, 1170, 813. *Schrad. Germ.* v. 1. 247, section 1. Leers t. 7. f. 6, 7. —Class and order, *Triandria Digynia*. *Nat. Ord. Gramina*.

Gen. Ch. *Cal.* Glume of two valves, erect, beardless, ovate, containing two florets; one of them elevated on a stalk. *Cor.* of two valves; the lower or outer one largest, awned at the back in the least perfect floret. Nectary a cloven membranous scale. *Stam.* Filaments three in each floret, capillary, rather short; anthers long, linear, cloven at each end. *Pist.* Germen ovate; styles two, capillary, diverging; stigmas oblong, feathery. One floret has either no pithil, or only an imperfect one. *Peric.* none, except the permanent glumes. *Seed* solitary, ovate, attached to the hardened corolla.

Ess. Ch. Calyx of two valves, two-flowered; one floret with an imperfect germen. Corolla of two valves; the outer one awned.

1. *H. lanatus*. Meadow Soft-grass. *Linn. Sp. Pl.* 1485. *Curt. Lond. fasc.* 4. t. 11. *Schreb. Gram.* 145. t. 20. f. 1. *Sm. Engl. Bot.* t. 1169. *Knapp. t.* 37. *Leers.* 219. t. 7. f. 6. (*Gramen pratense paniculatum molle*; *Scheuchz. Agrost.* 234. t. 4. f. 24, A, B.)—Calyx-glumes woolly. Lower floret beardless; upper with an arched recurved awn. Leaves downy on both sides.—Abundant in meadows and pastures throughout Europe, especially where the ground is sandy, flowering in June and July. The roots are perennial, fibrous, tufted, not creeping. Stems several, a foot or two in height, simple, erect, leafy, jointed, clothed with soft, deflexed, dense hairs. Leaves flat, acute, greyish, clothed on both sides, but especially beneath, with similar pubescence; the sheaths of the uppermost longest and swelling. *Stipula* short and blunt. *Panicle* erect, compound, dense, downy, hoary, mostly with a purplish tinge; its ultimate stalks capillary. *Calyx-valves* nearly equal in length, the

innermost broadest. *Florets* not rising above the calyx; the upper one scarcely ever having any pithil. Its outer glume is blunt, terminating in a small awn, which, when the flowers are arrived at full maturity, is recurved in an arched manner, and is well compared by *Scheuchzer* to a fishing hook. This grass is mown for hay, along with any others that happen to grow with it, but has not been recommended for particular cultivation.

2. *H. mollis*. Creeping Soft-grass.—*Linn. Sp. Pl.* 1485. *Curt. Lond. fasc.* 5. t. 8. *Schreb. Gram.* 149. t. 20. f. 2. *Sm. Engl. Bot.* t. 1170. *Knapp. t.* 38. *Leers.* 218. t. 7. f. 7. (*Gramen caninum paniculatum molle*; *Scheuchz. Agrost.* 235. t. 4. f. 25.)—Calyx-glumes partly naked. Lower floret beardless; upper with a sharply-bent awn. Root creeping.—Native of shady copses and hedges, but much less frequent than the former, from which it is distinguished by its creeping root, and the acute angle formed by the awn of the male floret when ripe and dry. It is moreover a more slender and less downy grass, with a smaller panicle, but larger flowers, and more prominent awns. It blossoms in July, and is considered of no value to the husbandman, but rather noxious, as a kind of couch-grass. The widely-spreading roots are, indeed, in some situations, difficult of extirpation, but they do not thrive in open land.

3. *H. avenaceus*. Oat-like Soft-grass. *Wiggers. Holfat.* 72. *Sm. Fl. Brit.* 90. *Engl. Bot.* t. 813. *Knapp. t.* 39. *Schrad. Germ.* v. 1. 247. (*Avena elatior*; *Linn. Sp. Pl.* 117. *Curt. Lond. fasc.* 3. t. 6. *Mart. Rust.* t. 7. *Leers.* 40. t. 10. f. 4.)—Calyx-glumes unequal, smooth. Male floret lowest, with a bent awn. Root knotty.—Common in pastures, meadows, and waste ground, flowering in June and July. Root perennial, of two knots, or swollen joints, one above the other. Stems a yard high. Leaves darkish green, rough and rather harsh. *Stipula* short, abrupt, minutely toothed. *Panicle* half-whorled, the branches consequently leaning one way. Flowers much larger than the two preceding, scarious, shining, not downy. Anthers pendulous, purple. The male floret has the rudiments of a germen, and is lowest in this species, always conspicuously awned; the other is but slightly elevated. No use is made of this grass.

Schrader makes a species, under the name of *H. bulbosus*, of what we consider as a variety of this, growing in cultivated fields, and thence, if we mistake not, acquiring rather more bulbs, and downy joints to the stem, both circumstances originating probably from a more exposed and dry situation than is natural to it. *Gramen bulbosum nodosum*, *Lobel. Ic.* v. 1. 23, is considered as a representation of this.

H. laxus of Linnæus, by his character of the florets, should seem to belong to this genus, but its racemose habit is very dissimilar, and the flowers require to be examined by those who have access to them alive. It grows in North America, and has the habit, but not the character, of *Michaux's Festuca diandra*, *Boreal. Amer.* v. 1. 67. t. 10.

H. striatus, Linn. is the very same thing as his *Panicum curvatum*.

H. ferratus, Linn. *Suppl.* 433, found at the Cape by Thunberg, is probably of some other genus, possibly a *Sorghum*. Its strongly serrated leaves are extremely peculiar.

H. latifolius, Linn. *Sp. Pl.* 1486, is also *Cenchrus Japapaceus* of the same work, two pages forward. This is an East Indian grass, with three or four singularly barbed florets in each calyx, quite unlike a genuine *Holcus*, but we

cannot investigate its flowers, so as to decide, with any certainty, concerning its true genus.

HOLCUS, in *Agriculture*, the name by which a genus of grasses is known; but few of the species of which are found useful to the farmer. It signifies soft grass.

HOLCUS *lanatus*, the meadow soft grass, which is supposed, by Mr. Curtis, to be a very common grass in all meadows and pastures, as well as in waste grounds and woods newly cut down, and which is also hardy, as well as productive of foliage, flowering a month later than the *anthoxanthum*, and when its red panicle appears, it is considered by the farmers that their grasses are ready for the scythe. Its foliage is soft and woolly, which, if not disliked by cattle on that account, may, it is supposed, rank with some of the best grasses; if it were more curly, it would, however, be more valuable. It is not, however, thought so well of by Mr. Sole; as from its particular softness, he cannot conceive it excellent either as a pasture or hay grass. It is the grass which is usually known to farmers in this country by the name of Yorkshire-white.

HOLCUS *mollis*, the name by which the creeping soft grass is known. It has been suggested by Mr. Curtis in his "Tract on Grasses," that he is induced to think better of it now, than when he figured and described it in his "Flora Londinensis," having found that it will grow well in a sandy soil, and bear the drought of summer, better than most others. And it is added that captain Dorset is of opinion that it may even be cultivated to advantage in soils of the barren sandy kind.

HOLD, in the *Manege*. See RETAIN.

HOLD, in *Rural Economy*, a term applied to female animals, which after being covered or connected with the males, without miscarrying, are said to hold.

HOLD, of a *ship*, the lowest part of the ship, including all that part of her inside lying between the floor and the lower deck, through her whole length.

The hold is the store-room in a merchant ship, or the place wherein the goods, at least all the heavier and more cumbersome, are stowed: the rest are disposed between the two decks; at least in Dutch ships, which have their holds very shallow, and the space between the decks very high. The hold contains the ballast, provisions, and stores, of a ship of war. The several store-rooms are separated by bulk heads, and are denominated according to the several articles they contain, the sail-room, the bread-room, the fish-room, the spirit-room, &c.

To find the burden of a ship, the hold is to be measured.

HOLD, in *Sea Language*, is understood to signify a particular situation with regard to the shore, by which she is enabled to keep within a sufficient distance, to facilitate her course, or answer some other important object. *Keep a good hold of the land*, implies to keep near, or in sight of the land.

HOLD, *after*, denotes that part of the hold which lies abaft the main-mast.

HOLD, *fore*, is that part of the hold which is situated in the fore-part of the ship, or before the main hatchway.

HOLD *its own*, at *Sea*. A ship is said to hold its own, that keeps her course right forward.

HOLD, *to rummage the*, is to remove and clear the goods and things therein.

HOLD, *preedy the*, in the *Sea Language*. See PREDY.

HOLD, *to trim the*. See TRIM.

HOLD, *stowing the*, a sea-phrase for taking goods into the hold. See STOWAGE.

HOLD, in *Music*, is a mark, like an arch, with a point in

the middle of it, placed over some single notes, which has been used to signify that such note is to be made longer than ordinary; but it now more commonly denotes that the song ends there, and is only used when the song ends with a repetition of the first strain, or part of it.

HOLDE, in our *Old Law Books*, is used for the bailiff of a city or town: and sometimes for a general.

HOLDEN, in *Geography*, a township of America, in Worcester county, Massachusetts, seven miles N. of Worcester, and 51 W. of Boston; containing 1142 inhabitants.

HOLDEN, JOHN, in *Biography*, author of an excellent essay towards a rational system of music.

We are unable to give a biographical account of this ingenious author; but his work, which was published at Glasgow, in long quarto, half bound, in 1770, seems to have been much less noticed by the public than it deserves. Its principles are good, and explained in clear and correct language. Without discovering a marked partiality for ancient or modern music, or an exclusive predilection for the productions of any particular country or individual, he has endeavoured, and we think with considerable success, to explain the materials with which good compositions are built; and, without pedantry or fantastical innovations, has ranged through the wide extended regions of the art. We will not say that this little treatise (in size) renders all other books on the subject unnecessary, or that the author has left nothing for subsequent writers to do. No; all we mean to say is, that what he has done, is well done; but if his work had been much more voluminous than it is, much must have been left for ingenious, intelligent, and speculative writers to say on the subject, and during the lapse of more than 30 years, since this book appeared, such a rapid progress has been made in the theory and practice of the art, that Mr. Holden, if still an inhabitant of earth, might fill a second volume of his work by describing, the new passages and effects in the works of Haydn and Mozart alone, that have delighted the lovers of music, since the publication of his first volume.

The author, in Part I., has treated with clearness and ingenuity the following subjects:

- Of the natural scale, 26 sections.
- Application of the scale, 9 do.
- Of the modern system of music, 22 do.
- Of time, 45 do.
- Miscellaneous explanations, 15 do.
- Harmonical consonances, 26 do.
- Of dissonances.
- Of fundamental progressions.
- Of the flat series.
- Of chromatic.
- Of plain discant.
- Figurative melody.

Part II.

- Of the theory of music (sound).
- Single musical sounds.
- Of musical sounds in succession.
- Of harmonical arithmetic (ratios).
- Of combined sounds.

This author is no servile follower of any preceding writer: his precepts seem to arise from experience and reflection.

His calling the pause and final mark, N^o 101, a *bold*, is not a term in use at present. The Italian term for it is *corona*, or crown. It is, sometimes, colloquially called in England a *bull's eye*; but it is vulgar ☉ ☉

Indeed,

Indeed, in these chapters we have a musical dictionary, or technica: rules for thorough base: harmonics, and many other things, which the titles of the chapters do not promise.

There is in this work no parade of great reading, or knowledge of languages; yet we perceive that the author is not unacquainted with Zarlino, Rameau, d'Alembert, Rousseau, and Serre of Geneva.

In the plate facing p. 76, he calls C, with a ϵ in the key of G, a fundamental base; but the fundamental base to that chord as 4th of the key, is A with a γ th, and the author seems to be not perfectly familiarised to Rameau's *basse fondamentale*.

The plate facing p. 100, is a bad specimen of his abilities in composition. The repeating the same harmony to the first note of a new bar, as had been given to the last note of the preceding bar, will always be found insipid, and what is constantly avoided by contrapuntists of the first class.

He gives us instances of his harmony, but none of his melody; except such as are psalmodic.

But melody is very hard to teach. Keeping good company, that is, frequently hearing good music, forms the taste, and stimulates invention. A man that hears nothing but psalmody and national tunes, will never produce graceful and elegant melody, or great effects in harmony.

HOLDEN'S *Temperament of the Musical Scale*. In Mr. John Holden's "Essay towards a Rational System of Music," he recommends a system of tuning common-keyed instruments, in which the series of eight 5ths C, G, D, A, E, B \times F, \times C and \times G upwards are each flattened $\frac{1}{4}$ th of a major comma, and the three 5ths c, F, b B, and b E downwards, are also flattened $\frac{1}{4}$ c, leaving a wolf or bearing 5th between \times G and b E. Mr. Farey, in the 5th Scholium to his *Musical Theorems*, in the *Phil. Mag.* vol. xxxvi. p. 46, shews, that in this regular douzeave, the fifths are as much tempered flat as the major thirds are sharp (not flat as printed), and whence we obtain the fifth's temperament = 2.20157 Σ flat, the Vth wolf = 12.20944 Σ , the IIIrd temperaments 2.20157 Σ sharp, the IIIrd wolves = 16.61258 sharp, the VIth temperaments = 4.40314 Σ sharp, and the VIth wolves = 18.81316 Σ sharp. Only three of the fifths, viz. between C \times , G \times , b E, and b B in this system, differ from those in Mr. HAWKE'S *Douzeave System*, see that article.

At pages 338 and 364 of the work above quoted, Mr. Holden, proceeding on the mistaken principles to which we have adverted in our article *GRAVE Harmonics*, gives an ascending and a descending scale of intervals, which, when combined and reduced to one fundamental, stand as follows: viz.

| | Σ | <i>f</i> | <i>m</i> | | Σ | <i>f</i> | <i>m</i> |
|--|----------|----------|----------|---|----------|----------|----------|
| c { $\frac{1}{2}$ $\frac{32}{3}$ | 612 | + 12 | + 53 | \times F { $\frac{7}{10}$ $\frac{32}{5}$ | 314.9472 | + 6 | + 27 |
| B { $\frac{21}{40}$ $\frac{8}{15}$ | 598.9472 | + 12 | + 52 | F { $\frac{3}{4}$ $\frac{16}{21}$ | 301 | + 6 | + 26 |
| b B $\frac{4}{7}$ | 568.9472 | + 11 | + 49 | E { $\frac{7}{9}$ $\frac{64}{51}$ $\frac{4}{5}$ | 254 | + 5 | + 22 |
| A { $\frac{7}{12}$ $\frac{16}{17}$ $\frac{3}{5}$ | 555 | + 11 | + 48 | b E { $\frac{21}{32}$ $\frac{64}{75}$ | 240.0528 | + 5 | + 21 |
| \times G { $\frac{61}{105}$ $\frac{16}{25}$ | 494.0528 | + 10 | + 43 | D { $\frac{7}{9}$ $\frac{8}{9}$ | 221.9472 | + 4 | + 19 |
| G { $\frac{21}{32}$ $\frac{2}{3}$ | 475.9472 | + 9 | + 41 | \times C $\frac{24}{25}$ | 208 | + 4 | + 18 |
| | 462 | + 9 | + 40 | C $\frac{1}{1}$ | 197 | + 4 | + 17 |
| | 451 | + 9 | + 39 | | | | |
| | 407.9472 | + 8 | + 35 | | | | |
| | 394 | + 8 | + 34 | | | | |
| | 371.9472 | + 7 | + 32 | | | | |
| | 358 | + 7 | + 31 | | | | |

By the decimal fractions of schifmas (Σ) in the third column, it will appear, which of these ratios involve the number 7, which does not belong to the diatonic system, amounting to nearly one-half of the whole number of notes, with which this fanciful system is encumbered.

HOLDER, WILLIAM, in *Biography*, doctor of divinity, canon of Ely, residentiary of St. Paul's, and sub-dean of the Chapel Royal, not only merits particular notice as an able and learned writer on the theory of music, but as an ecclesiastical composer of anthems, of which three or four are preserved in Dr. Tudway's collection, British Museum. From the regularity and unembarrassed arrangement of the several parts in these specimens of his composition, it is easy to discover, that he had not studied and practised counterpoint in the superficial manner of an idle dilettante, but with the application of a diligent professor.

Besides his eminence as a divine, and deep knowledge in music, he distinguished himself as a philosopher, a mathematician, and a philologist. He was one of the first fellows of the Royal Society, and in treating several curious subjects, nice selection and application of words manifest him to have

been a consummate master of our language. Indeed, the strength, precision, clearness, and compression of his style have been hardly ever equalled by any writer on philosophical subjects in our country; particularly in his admirable treatise on the "Elements of Speech," published 1669, and drawn up with the benevolent design of giving relief to a person that was deaf and dumb. In this essay he has analysed, dissected, and classed the letters of our alphabet so minutely and clearly, that it is well worthy the attentive perusal of every lover of philology, but particularly of lyric poets and composers of vocal music; to whom it will point out such harsh and untunable combinations of letters and syllables as from their difficult utterance impede and corrupt the voice in its passage.

In 1694, Dr. Holder published "A Discourse concerning Time," in which, among other things, the deficiency of the Julian Calendar was explained, and the method of reforming it demonstrated, which was afterwards adopted in the change of style. It is to be lamented that in treating this subject with so much clearness and ability, so good a musician did not extend his reflections on the artificial parts of

of time, to its divisions and proportions in musical measures; a subject upon which the abbatte Sacchi has written in Italian, "Del Tempo nella Musica;" but which rhythmically, or metrically considered in common with poetry, has not yet been sufficiently discussed in our own language.

The same year was published by Dr. Holder, "A Treatise on the Natural Grounds of Harmony," in which the propagation of sound, the ratio of vibrations, their coincidence in forming consonance, sympathetic resonance, or *sons harmoniques*, the difference between arithmetical, geometrical, and harmonic proportions, and the author's opinion concerning the music of the ancients, to whom he denies the use of harmony, or music in parts, are all so ably treated, and clearly explained, that this book may be read with profit and pleasure by most practical musicians, though unacquainted with geometry, mathematics, and harmonics, or the philosophy of sound. This book is said, in the introduction, to have been drawn up chiefly for the sake and service of the gentlemen of the chapel royal, of which he was sub-dean, and in which, as well as other cathedrals to which his power extended, he is said to have been a severe disciplinarian; for being so excellent a judge and composer himself, it is natural to suppose that he would be the less likely to tolerate neglect and ignorance in the performance of the choral service. Michael Wise, who perhaps had fallen under his lash, used to call him Mr. *Snub-dean*.

Dr. Holder died in 1696, aged 82, and was buried in the subterraneous chapel of St. Paul's church, where a marble monument is erected to his memory, with an inscription reciting his titles, talents, and extensive knowledge.

HOLDERNESS, in *Geography*, a township of America, in Grafton county, New Hampshire, on the E. side of Pemigewasset river, incorporated in 1761, and containing 531 inhabitants; 6½ miles N.N.W. of Portsmouth.

HOLD-FAST, an iron hook, in shape of the letter S, fixed in a wall, to retain and support it.

This term also denotes a tool used by joiners, &c., which goes through their benches, to hold fast such work as cannot be finished by being held in the hand.

HOLDING ON, in *Sea Language*, is the act of pulling back the hind-part of any cable, or other rope, which is heaved round by the capstan or windlafs, or drawn in by the purchase of a tackle. As there are only a few turns of any rope above the barrel of the capstan or windlafs when it is employed in heaving, an equal quantity of the rope will necessarily come off from the capstan at the same time; and this is accordingly pulled back as strongly as possible to prevent it from surging or jerking round the barrel, by being held too loosely; so that holding-on denotes the act of retaining any quantity of rope acquired by the effort of a capstan, windlafs, or tackle, as these are employed in hoisting as well as in heaving.

HOLDING water signifies the operation of stopping a boat in her course, by holding the oars in the water, and bearing the blade or flat part strongly against the current made along-side, by her passing swiftly through the water.

HOLDING over a term, &c., in *Law*. By 4 Geo. II. cap. 28. in case any tenant for life or years, or other person claiming under or by collusion with such tenant, shall wilfully hold over after the determination of the term, and demand made and notice in writing for recovering the possession of the premises, by him to whom the remainder or reversion shall belong; such person so holding over, shall pay for the time he continues at the rate of double the yearly value of the lands so detained. See **EJECTMENT** and **TRESPASS**.

HOLDSWORTHY, in *Geography*, a small market town

and parish in the hundred of Black Torrington, Devonshire, England, is situated near the western borders of the county, between two small streams, which fall into the river Tamar, at a small distance. In the year 1801, this town was returned to parliament as containing 204 houses, and 1045 inhabitants; the chief employment of the latter is derived from the operations of agriculture. Holdsworth is 21¼ miles W. from London; has a weekly market on Saturdays, and three annual fairs. Polwhele's History and Antiquities of Devonshire.

HOLE, in *Anatomy*, denotes such a cavity of a bone as penetrates from one side to the other.

HOLE, Black, at *Calcutta*, denotes a place of confinement, eighteen feet by eighteen feet, containing three hundred and twenty-four square feet, in which a hundred and forty-six persons were shut up by order of the viceroy: so that there was a square for each person of twenty-six inches and a half by twelve inches, which was just sufficient to hold them, without pressing violently upon each other. To this dungeon there was only one small grated window; and the weather being very sultry, the air within could neither circulate nor be changed. In less than an hour after their being inclosed, many of the unhappy people were seized with extreme difficulty of breathing, several were delirious, and the place was filled with incoherent ravings and exclamations of distress; the cry of *water! water!* was predominant. This was handed to them by the centinels, but had no effect in allaying their thirst. In less than four hours, many were suffocated, or died in violent deliriums. In an hour more, the survivors, except a few at the grate, were to the highest degree phrenitic and outrageous. At length those at the grate became so insensible, that we have no account of what happened, till they were released at six o'clock next morning, having been confined from seven the preceding evening. Such were the effects of animal effluvia in a close and unventilated place, in the space of eleven hours, that out of a hundred and forty-six persons, no more than twenty-three came out alive, and those in a high putrid fever, of which, however, by fresh air, &c. they gradually recovered.

HOLE, in *Geography*, a town of Norway, in the diocese of Aggerhuus; 15 miles N.W. of Christiania.

HOLE town, a town on the W. coast of the island of Barbadoes. N. lat. 13° 12'. W. long. 58° 31'.

HOLE, in *Mining*, signifies the act of holeing, clearing, kiving, curving, under-going, or under-mining the face or bank of coal in a coal-pit, preparatory to its being fell or wedged down, the processes of which will be found in Mr. Farey's Report on Derbyshire, vol. i.

HOLEING, signifies the under-mining or loosening of coals in a pit. See **HOLE**.

HOLEING-stuff, signifies the small earth or coals which is cut or picked out from under the coal in a pit: the small coals thus obtained are sometimes holeing-coal, sleek, &c.

HOLEN, in *Geography*, a town of Norway, in the diocese of Aggerhuus; 18 miles from Tomberg.

HOLENECK, a town of the duchy of Stiria; 10 miles S. of Voitsberg.

HOLERS, in *Mining*, are a set of colliers, whose business it is, during the night, where coals are worked the long way, to hole, or undermine the banks or face of coal, ready for the next day's work.

HOLESCHAU, or **HOLESSOW**, in *Geography*, a town of Moravia, in the circle of Prerau; 20 miles S. E. of Olmutz. N. lat. 49° 18'. E. long. 17° 32'.

HOLIBUT, or **HOLYBUT**, in *Ichthyology*, a name given by the people of some parts of England to the turbot in general;

neral; but in other parts only to the larger fishes of that species. See *PLEURONECTES Hypoglossus*.

HOLINGSLED, RALPH, in *Biography*, an English chronicler, descended from a family settled at Bosely in Cheshire, was educated at Cambridge, where he is said to have taken his degree of M. A. in 1544. He lived in some capacity, probably as steward, with Thomas Burdett, esq., of Bromcote in Warwickshire, at which place he died about the year 1580. Holingsled has given name to a compilation of English history from the earliest periods, of which the first edition was published at London in 1577, in two volumes folio. The second edition was published ten years after, and brought down the history to the preceding year. Holingsled was employed by Reginald Wolfe, printer to the queen; and he was assisted by several other persons, and upon his death it was continued by John Stowe. Very considerable retrenchments from the first edition were made in the second and third, of those parts which were not agreeable to Elizabeth and her ministers, by order of the privy council. Amidst the tediousness and vulgarity of these chronicles many facts are to be found, highly useful in elucidating the manners and customs of the more early periods. *Biog. Brit.*

HOLISTHEMA, in *Surgery*, a dislocation.

HOLITZ, in *Geography*, a town of Hungary; 32 miles W.N.W. of Topoltzen.—Also, a town of Bohemia, in the circle of Chrudim; 10 miles N. E. of Chrudim.

HOLKBERG, a town of Sweden, in East Gothland; 35 miles S.W. of Linköping.

HOLL, a word which is provincially employed to signify the hollow of a ditch, in contradistinction to the dick or bank of it.

HOLLAND, PHILEMON, in *Biography*, was born at Chelmsford, in Essex, about the year 1551; and after receiving the rudiments of learning at the grammar-school of that place, was sent to Trinity college, Cambridge, of which he became fellow, and left the university after having taken the degree of M. A. He was appointed head master of the free-school of Coventry, where he had settled; and in this laborious station he not only attended assiduously to the duties of his office, but served the interests of learning, by undertaking those numerous translations, which gained him the title of *Translator general of the age*. But, as if these occupations were insufficient for the employment of his time, he likewise turned his studies to medicine, and practised in that profession with considerable reputation in his neighbourhood; and at length, rather late in life, he became a doctor of physic, in the university of Cambridge. He was an amiable man in all the relations of private life, and by his habits of temperance and regularity attained his 85th year, not only with the full possession of his intellects, but with his sight so good, notwithstanding his incessant use of it, that he never had occasion to wear spectacles. He continued to translate till his 80th year; and his translations, though devoid of elegance, are accounted faithful and accurate; and afford a memorable proof, how much a single man may perform, if his whole time be employed to advantage. He translated into English "Livy," "Pliny's Natural History," "Plutarch's Morals," "Suetonius," "Ammianus Marcellinus," "Zeno-phon's Cyropædia," and "Camden's Britannia," to the last of which he made several useful additions: and into Latin he translated the geographical part of "Speed's Theatre of Great Britain," and a French "Pharmacopœia of Brice Bauderon." A quibbling epigram upon his translation of Suetonius has often been retailed in jest books.

"Philemon with translations so does fill us,
He will not let Suetonius be Tranquillus."

See Aikin *Biog. Mem. of Medicine*.

HOLLAND, in *Commerce*, a fine, white, even, close kind of linen cloth, chiefly used for shirts, sheets, &c.

It is principally wrought in the provinces of Holland, Friseland, and other parts of the United Provinces; whence the appellation.

The principal mart or staple of this cloth is at Haerlem, whither it is sent from most other parts, as soon as wove, there to be whitened in the ensuing spring.

That manufactured in Friseland is the most esteemed, and called Frise Holland. It is the strongest and the best coloured of any of that fineness: it is never calendered, nor thickened, as the rest; but it is imported just as it comes from the whistler: it is distinguished by its being yard quarter and half wide; which is half a quarter more than those commonly called Frise Hollands, which are not right.

HOLLAND, gulf, is very white and fine, and is chiefly used for shirts, being the strongest of any for its fineness, except true Frise. It is just yard wide.

HOLLAND, Altmær, is a very strong cloth, and wears exceeding well. It is about yard quarter and half wide.

HOLLAND, in *Geography*, an appellation applied to the Seven United Provinces collectively, *viz.* Guelderland, Holland, Zealand, Utrecht, Overijssel, Groningen, and Friesland (which see), but primarily belonging to the chief of them. This country, once a celebrated republic, derives its name from the German word "Hohl," synonymous with the English term hollow, and denoting a concave or very low country. The people are called Dutch, from the German "Deutsch," or "Teutsch;" but "Deutschland" properly signifies the vast extent of Germany itself, though by the English restricted to a small portion, using a dialect of the German language. These provinces extend from the north of Groningen to the southern boundary along Austrian Flanders and Brabant, about 150 British miles; and in breadth, from the North sea to the kingdom of Westphalia, about 100 British miles. Their content, in square miles, is estimated at 10,000. They form a kind of peninsula, which is divided into N. and S. Holland; the former including all to the N. of Amsterdam, and the latter extending from the states of Zealand and Brabant to the river Ye. The population has been recently computed at 2,758,632, which, allowing the extent of territory in square miles to be 10,000, will give 275 for each square mile. After the dismemberment the French accounts state the population at 1,881,881. That of Holland, the chief province, has been calculated at 980,000. The country is low and marshy; some part of it being lower than the sea, from the inundation of which it is secured by dykes or dams; and the meadows, which are covered with water in the winter, are freed from it by means of mills, that are contrived for discharging it into the ditches and canals. Without these ditches and canals, serving as drains to the country, the soil would in most parts be incapable of cultivation. Among the marshes that deform the general face of the country, the traveller observes numerous and important cities and towns with admiration, and not without very honourable ideas of the astonishing powers of active industry, which have formed a habitable and enviable abode amidst the greatest natural disadvantages. The marshes, morasses, and heaths, which are characteristic of the different provinces, are however intermixed with groves, gardens, and meadows. Though the general aspect of the country presents an intimate combination of land and water, with few hills and woods, but rather moderate

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moderate elevations consisting of barren sand, Holland furnishes little scope for the operations of agriculture, the land being mostly appropriated to pasturage, excepting that small portion of it which is assigned to the culture of madder and tobacco. In the province of Guelderland, and the barony of Breda, the waste grounds are extensive, being over-run with broom and heath, and the soil being generally a black sand. In the north of Holland, and in Friesland (which see), the pastures supply such a quantity of good butter as to form a staple article of commerce. The chief rivers of the United Provinces are the Rhine, and the Meuse or Maas, which see respectively. The lakes are few and of small extent, if we except that which is called the sea of Haerlem, on the north of which is the Ye, a broad piece of water, resembling a creek of the sea rather than a river, which passes by Amsterdā. This country has neither mountains nor elevated wood-lands, nor mines; its horses are chiefly procured from England and Flanders, and for its cows and oxen it is primarily indebted to Holstein. Fish abound on its shores, and particularly turbot and soals; but its herrings are chiefly obtained from the Northern ocean, by way of the port of Flardingē, or Vlaerdingē, W. of Rotterdam. The climate of this country is cold and humid, and therefore the dress of the inhabitants is calculated more for warmth than elegance; the houses and streets, both in the towns and villages, are distinguished by their cleanliness and neatness, and form a contrast to the squalid appearance of the German villages. The temperament of the Dutch is phlegmatic; and they are characterized by labour and perseverance rather than ardent and impetuous activity. Their ruling passion is the love of money. To such a degree does this passion prevail, if we may credit the report of a female traveller (Mrs. Radcliffe), that "the infatuation of loving money, not as a mean but an end, is paramount in the mind of almost every Dutchman, whatever may be his other dispositions and qualities; the addiction to it is fervent, inveterate, invincible, and universal, from youth to the feeblest old age." In stature the Dutch are low, and the women are commonly taller than the men; and notwithstanding the predominant passion of the country, the ancient female affection for gold and jewels is not yet eradicated. The moisture of the climate leads to the use of high-seasoned food, and of spirituous liquors. Besides the usual games, the chief amusements of the Dutch, in the days of their prosperity and wealth, were the theatres and the tea-gardens. The opulent merchants took delight in their villas, which were thickly planted among the numerous canals; and though their gardens were small, they were richly stored with tulips, hyacinths, and other flowers of immense value. In winter shooting was a favourite pastime; and the canals were crowded with people of all ranks. Others, however, whose means could afford it, amused themselves under the domestic roof, amidst their expensive collections of pictures and prints, which they contrived to render a lucrative article of commerce. The Dutch canals of the United Provinces, which are not less numerous than the roads in other countries, have been a means of commercial intercourse as well as of personal amusement, as they have served to augment their inland trade when their foreign commerce has declined, till late measures of the state, carried into effect by the ruler of the continent, have been no less injurious to them than to their neighbours. The chief manufactures of Holland are linens, pottery, and painted tyles; leather, wax, snuff, starch, paper, and also some articles of woollen, cotton, and silk. In a period of national prosperity and opulence, when their colonies were numerous on the coast of Hindoostan, in

Ceylon, at Batavia, and at the Cape of Good Hope, &c. and their maritime power very considerable, the most valuable branch of their commerce consisted in spices and drugs, brought from their settlements in the East Indies. Their fishery in the northern seas, and on our coasts as well as their own, was an object of importance. At a later period they have derived no small advantage from being the grand deposit of commerce between Great Britain and the Continent; but this intercourse is for the present interrupted; and more especially their inland trade with Germany and France, by the canals and Rhine. One of the most profitable articles of this trade consisted in the vast floats of timber which arrived at Dort, from Andernach and other places on the Rhine, and from the German forests. The length of these rafts is from 700 to 1000 feet, and the breadth from 50 to 90, and the floating island was directed by 500 labourers; and it is said, by the female traveller already cited, that the sale of one raft, on its arrival at Dort, occupied several months, and frequently produced more than 30,000*l.* sterling. The Dutch language is a dialect of the German; and the literature of the United Provinces has sustained an honourable rank. Among those who have contributed to its reputation in this respect we may mention Erasmus, Johannes Secundus, or Hans de Twede, Grotius, Boerhaave, Paul Merula, Adrian Junius, Meursius, Doufa, Heinsius, the Younger Vossius, and Hoogewegen of Leyden, who died in 1794, after having acquired the reputation of being the first Greek scholar in Europe. The largest and most celebrated Latin schools in this country were those at Rotterdam, Breda, Middleburg, Groningen, &c.; and its five universities are those at Leyden, Utrecht, Harderwyck, Franeker, and Groningen, besides two inferior colleges at Amsterdā and Dventer. At Haerlem there is an academy of sciences.

The Protestant religion, in the Calvinistic form, prevails through the United Provinces; and the treaty of Union, in 1579, provided for its perpetuity. In 1583, indeed, the states of Holland proposed, that no other form should be tolerated; but this resolution was wisely rejected; and every religion is permitted, on condition that it does not oppose the fundamental laws, or teach any doctrines that are subversive of the state; but employments of any consequence are restricted to Protestants. The ecclesiastical state is composed of four ranks, *viz.* professors at universities, preachers, elders, and deacons; and the government of the church is administered by consistories, classes, and synods. The consistory is the lowest court, commonly consisting of the clergy and elders of a particular town; while a class consists of deputies from several, and is commonly assembled three times in the year; a part of its duty being to visit the churches, and watch over the conduct of the clergy. The synods are either provincial or national; the first being assembled every year, while the national synod is only summoned on the most important occasions, when essential doctrines are to be discussed; and the last of these was that of Dort in 1618. The provincial synods are 53 in number, and consist of 1570 preachers. There are also many Walloon churches dispersed through the provinces, who hold a kind of synod twice a year, composed of deputies from their own sect. The Roman Catholics are supposed to have 350 churches, served by 400 priests. The other chief sects are Lutherans, Remonstrants, or Arminians, who have 43 teachers, Anabaptists, Jews, and a few Quakers.

As to the political history of the United Provinces, we may observe, that the original population of this country appears to have been Celtic; but when the Romans conquered the country, it was occupied by the Batavi, the most

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northern people of Belgic Gaul, supposed to be a German or Gothic progeny. (See *BATAVI*.) The Frisians, the next people adjoining to the Batavi on the N., extended themselves in the seventh century down to the Scheldt. In the eighth century the Frisians were subdued by the Franks under Charles Martel; but both the Frisians and the Franks became intermixed in the population of the country with the Batavians. (See *FRISONS* and *FRANKS*.) Our limits will not allow us to trace the history of these provinces, whilst they continued separate, and in a great measure independent of each other; nor can we detail the various conflicts with which they endeavoured to assert and maintain their liberty against the tyranny of the king of Spain and his emissaries. It will be sufficient to take up their history in the year 1566, when Holland and some inferior provinces revolted from the oppressive dominion of Philip II.; and thus commenced those sanguinary contests, which terminated in the union of Utrecht, Jan. 23d, A.D. 1579. For this purpose deputies from the provinces of Holland, Zealand, Utrecht, Friesland, Groningen, Overijssel, and Guelderland, met at Utrecht, and signed a mutual alliance, which formed the basis of that commonwealth, which afterwards became so renowned under the appellation of the United Provinces. This treaty of alliance was founded upon the infractions of the pacification of Ghent, solemnly acceded to by Philip, and a late invasion of certain towns in Guelderland. It was not intended by this alliance to divide the seven provinces from the other 10, or to renounce the pacification of Ghent; but its object was to preserve the liberty stipulated in that pacification, by more vigorous operations, and united councils. The chief articles of this union deserve to be recited, and they are as follow: the seven provinces shall unite in interest, as one province, never to be separated or divided by testament, donation, exchange, sale, or agreement; reserving to each particular province and city all its privileges, rights, customs, and statutes. In all disputes arising between any of the provinces, the rest shall interpose as mediators. They shall assist each other with life and fortune against every foreign attempt upon any particular province, whether to establish sovereignty, the Catholic religion, arbitrary measures, or whatever else may appear inconsistent with the liberties of the provinces, and the intention of the alliance. All frontier towns belonging to the United Provinces, shall, if old, be fortified at the expence of the provinces; if new, at the joint expence of the union. The public imposts and duties shall be farmed for three months to the highest bidder, and employed with the king's taxes in the public service. No province, city, or member of the union, shall contract an alliance with any foreign prince or power, without the concurrence of all the other members. Foreign powers shall be admitted into the alliance, only by consent of all the contracting parties. As to religion, the provinces of Holland and Zealand shall act in that particular as they think adviseable; the rest shall adhere to the purport of the edict published by the archduke Matthias, which prescribed, that no man should be oppressed on account of conscience. All the inhabitants, from the age of 18 to 60, shall be trained and disciplined to war. Peace and war shall be declared by the unanimous voice of all the provinces; other matters that concern the internal policy shall be regulated by a majority. The states shall be held in the usual constitutional manner, and coinage shall be deferred to future determination. Finally, the parties agreed, that the interpretation of these articles shall remain in the states-general; but in case of their failing, to decide in the stadtholder. In this grand alliance, sketched out by the prince of Orange, may be discerned the judicious steady counsel

of the master and true patriot. It was so universally approved, that in a short time the cities of Ghent, Nimeguen, Arnheim, Leewarden, Venlo, Ypres, Antwerp, Breda, Bruges, with several other towns, noblemen and persons of distinction, embraced and signed the union. The first coin struck after the alliance is expressive of the situation of the infant republic. It represented a ship labouring amidst the waves, unassisted by sails or oars, with this motto, "INCERTUM QUO FATATA FERANT." The history of this interesting struggle, says Pinkerton, has been depicted in glaring colours by the celebrated Grotius, who in this work sometimes rivals the acute brevity of Tacitus. At the end of this century the Dutch had established colonies at the Cape of Good Hope, and in the East Indies; and settlements were afterwards gained in South America. During the 17th century they rivalled the English in the empire of the sea; and greatly exceeded them in commercial advantages. After the obstinate naval conflicts in the reign of Charles II. their power began to decline. In 1672, Louis XIV. invaded Holland; and Amsterdam was saved merely by opening the sluices. In 1688, William, the stadtholder of Holland, ascended the throne of England; and a stricter intercourse subsisting between the countries, Holland became the grand channel of the commerce of England with the continent. The stadtholder was declared hereditary in 1747. By the war in 1756, Holland and France became intimately connected, and a French party arose in the country, which opposed the stadtholder; but he was supported by the English. In 1780, a war occurred between Great Britain and Holland, which terminated in 1784, after exposing to Europe the decline and weakness of the United Provinces, still further displayed by the entrance of the duke of Brunswick in 1788, who may be said to have subdued them (says Pinkerton) without a blow. As the Dutch joined the coalition against the French, their country fell a prey to the invaders, during the hard frost of the winter of 1794-5; and the stadtholder took refuge in England in 1795. The country was then denominated the Batavian republic; and divided into eight departments, &c. However, these provinces were soon afterwards erected into a kingdom, and assigned by Napoleon the French emperor to his brother Louis. On the 1st of July 1810, Louis Napoleon abdicated his throne, and it was decreed on the ninth instant, by Napoleon, that it should be united to France; that the city of Amsterdam should be the third city of the empire; that Holland should have six senators, six deputies to the council of state, 25 deputies to the legislative body, and two judges in the court of cassation; and that the officers by sea and land, of whatever rank, should be confirmed in their employments, under commissions to be delivered to them, signed under the emperor's hand, the royal guard being united to the imperial guard. The emperor's decree announces other provisional enactments for the management of the administration, finances, &c. The imperial decree has been since executed.

Under their former government, the United Provinces were composed of seven republics, each retaining its own states, consisting of nobles and burgesses. The provincial states sent deputies to the States-general, each republic having only one vote, though its deputies may be numerous. But the States-general seldom exceeded twenty-six persons, who used to assemble in a small room at the Hague, enjoying the right of peace and war, appointing and receiving ambassadors, naming the greffier, or secretary of state, and all the staff-officers. The council of state directed the army and finances; and what was called the council of deputies considered the troops and finances of each province. The grand

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penſionary of Holland preſided in the provincial ſtates, and council of deputies of that country. The ſtadtholder was, originally, a kind of dictator, appointed, from the neceſſity of the times, to conduct the emancipation of the ſtate. When that neceſſity vaniſhed, the office became of dubious authority, till William III., in 1672, procured it to be declared hereditary. As he died without children, the ſtates revoked this power; but in 1747, it was again made hereditary in favour of William IV.

The new conſtitutional code, under the ſovereignty of Louis, conſiſted of five parts, or rather ſhort chapters. The civil, religious, and political inſtitutions were continued; and the public debt guaranteed. The council of ſtate was compoſed of thirteen members. All forms of religion were tolerated, even that of the king; to whom it pertained to nominate to all offices and places, formerly in the gift of the grand penſionary; for the code takes no notice of the ſtadtholder. The coin was to be ſtamped with his eſſigy; and, with the advice of the privy council, he had the prerogative of pardoning offences. The government of the colonies was ſpecially and excluſively veſted in him; but the general adminiſtration of the kingdom was committed to four miniſters of ſtate. The legiſlative body was appointed to conſiſt of thirty-eight members, choſen for five years, in a certain proportion for the ſeveral provinces; thoſe for Holland being ſeventeen. The title of high-mightineſſes was retained for the aſſembled members of the legiſlative body, the late grand penſionary being declared preſident for life. This aſſembly was appointed to meet twice in the year, in April and November; but extraordinary aſſemblies might be ſummoned by the king. Juſtice was directed to be adminiſtered according to the local cuſtoms and ſtatutes of each province and city, the ordinances of the States-general, and in defect of all theſe, the Roman code. Each province has a ſupreme court, to which appeals lie from the lower courts of juſtice, except in criminal cauſes, in which the ſtadtholder might pardon, by the conſent of the preſident and ſuperior court of each province, except in caſes of murder and other flagrant crimes.

The army was formerly comprized at about 36,000, but it has been ſince the revolution incorporated with that of France. The navy, which uſed to conſiſt of forty ſhips of the line, has now almoſt totally diſappeared. The revenue was about 3½ millions ſterling; but the expenditure far exceeded it, ſo that the national debt was computed at about 130,000,000*l.* ſterling; but 2,800,000*l.* were annually received as the intereſt of loans to foreign powers. The dilapidation of the revenue and the increaſe of the debt have been very ſenſible ſince the eſtabliſhment of a nominal monarchy. The political importance of the United Provinces is altogether conſolidated with that of France, of which empire it is become a part, and to which it is abſolutely ſubject. What changes farther await it the wiſeſt politician cannot conjecture. We refer to the article UNITED PROVINCES. Pinkerton's Geogr. vol. i. Mod. Un. Hiſt. vols. xxvii. xxviii.

HOLLAND, a town of Pruffia, in the province of Oberland, ſituated near the river Weeſke, and ſtrongly fortified; 40 miles S.E. of Dantzig. N. lat. 54° 2'. E. long. 19° 37'.

HOLLAND, *New, Notavia*, or, as Cook called the eaſtern part of it, "*New South Wales*," is an iſland in that part of the globe lately diſtinguiſhed by the name of Auſtralasia, ſo large as to be entitled to the appellation of a continent. Its length from E. to W. is about 43 degrees of longitude, in the medial latitude of 25°, that is, about 2340 geographical miles, or 2730 Britiſh. The breadth from N. to S. extends

from 11° to 39°, being 28°, 1680 geographical, or 1960 Britiſh miles. In the account of Cook's voyage, its ſquare ſurface is ſtated to be more than equal to the whole of Europe. This, however, is an exaggerated eſtimate; becauſe Europe is ſuppoſed to be about 3300 Britiſh miles in its utmoſt length, and its greateſt breadth 2350. This defect is, indeed, compenſated by the proximity of many large iſlands; and the whole of Auſtralasia will probably be found greatly to exceed the European continent. This immense territory was firſt diſcovered in the beginning of the ſeventeenth century, and then called "*Terra Auſtralis Incognita*." The firſt diſcovery is dated by De Broſſes in October 1616, when the weſtern part was explored by Hartog. In 1628, the weſtern part was diſcovered by ſome veſſels belonging to the Dutch Eaſt India company, and called "*De Witt's Land*," from the name of the commodore who commanded the ſquadron; and in the following year, a Dutch ſhip, commanded by Capt. Peſſart, was wrecked on this coaſt. In 1642 Capt. Taſman was ſent by the Dutch Eaſt India company to ſurvey the coaſt, who viſited the ſouthern part, which he called "*Anthony Van Diemen's Land*," by way of contradinction to "*Diemen's Land*," on the north coaſt. (See *DIEMEN'S Land*.) Capt. Dampier fell in with this iſland in 1688, and viſited it again in 1699. He deſcribes the wretched condition of the inhabitants, as deſtitute of houſes and clothes; he repreſents them as black, tall, thin, ſtraight-bodied with ſmall limbs, great heads, heavy brows, and eye-lids half cloſed for guarding their eyes againſt the flies, which were numerous and troubleſome. He further deſcribes them as having large bottle-noses, full lips and wide mouths, without the two fore-teeth of their upper jaws, and without beards; long-ſiſaged, and deſtitute of every graceful feature in their faces. The next perſon who viſited this iſland was Capt. Cook, in 1770, who by his extenſive operations on its E. ſide, left little to be done towards completing the full circuit of it. Between Cape Hicks, in latitude 38°, where his examination of this coaſt began, and that part of Van Diemen's Land, whence Taſman took his departure, the diſtance was not above 55 leagues. It was highly probable, therefore, that they were connected; though Capt. Cook cauſiouſly ſays, that he could not determine whether his *New South Wales*, (that is, the eaſt coaſt of New Holland,) joins to Van Diemen's Land, or not. But what was thus left undetermined by the operations of his firſt voyage, was, in the courſe of his ſecond, ſoon cleared up. Capt. Furneaux, in the *Adventure*, during his ſeparation from the *Reſolution* in 1773, having explored Van Diemen's Land, from its ſouthern point, along the E. coaſt, far beyond Taſman's ſtation, and on to the latitude 38°, where Capt. Cook's examination of it in 1770 had commenced. We have now, therefore, a full knowledge of the whole circumference of this vaſt body of land, though moſt of its interior parts remain ſtill unknown. To the ſouthward of lat. 33° or 34°, the land in general is low and level; far northward it is hilly, but in no part can be called mountainous: and the hills, and mountains, taken together, form but a ſmall part of the ſurface, in comparison with the vallies and plains. It is rather barren than fertile, though the riſing ground is chequered by woods and lawns, and the plains and vallies are in many places covered with herbage: the ſoil, however, is frequently ſandy, and many of the lawns, or ſavannahs, are rocky and barren, eſpecially towards the northern part, where vegetation is leſs vigorous than towards the ſouth. The inland country appeared to be better clothed than the ſea-coaſt. The banks of the bays are covered with mangroves, to the diſtance of a mile within the beach, under which the ſoil is a rank mud, always overflowed by a ſpring

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spring tide; farther within the country, a bog was occasionally found, upon which the grass was very thick and luxuriant, and sometimes a valley occurs, that was clothed with under-wood; but the soil in general did not seem to admit of cultivation. In the interior of the country immense strata of coal have been discovered. The coast, especially to the northward of 25° S. lat. abounds with fine bays and harbours, where vessels may be secure from all winds. The country appeared to be well watered by springs and small brooks, but it has no large rivers. Of timber-trees there are but two sorts; the largest is the gum-tree, which grows over the whole country, the gum of which is a deep red, and resembles the sanguis draconis, if it be not the same; the other grows somewhat like our pines. The wood of both is extremely hard and heavy. Others are covered with a soft bark, which is the same that is used in the East Indies for caulking of ships. The country furnishes three sorts of palms; the nuts of one of which operated both as an emetic and cathartic with great violence. The quadrupeds of this island are the dog, of the chacal kind, which never barks, the kangaroo, an animal of the opossum kind, resembling the phalanger of Buffon, and another like the pole-cat, called by the natives Quoll. Here are many kinds of bats. The sea and other water-fowl are gulls, shaggs, inland geese or gannets, boobies, noddies, curlews, ducks, pelicans of an enormous size, black swans, the *mœnura superba*, having its tail expanded in the form of a lyre, and many others. The land birds are crows, parrots, parroquets, cockatoos, and others of the same kind, exquisitely beautiful, pigeons, doves, quails, bustards, herons, cranes, hawks, and eagles. Among other reptiles, here are various kinds of serpents, some noxious and some harmless, scorpions, centipeds, and lizards. Of the insect tribe the principal are the musquitoe and ant, some of the latter of which are green, and form their nests in a curious manner upon the trees. The ants are of several kinds. The sea abounds with fish of various sorts: upon the shoals and reef are incredible numbers of the finest green turtle in the world, and oysters of various kinds, particularly the rock oyster and the pearl oyster. Here are very large cockles, lobsters, and crabs. In the rivers and salt creeks there are alligators.

The number of inhabitants in this country seems to be very small in proportion to its extent. The immense tract of the interior country remains unexplored, but there is reason to believe that it is either wholly desolate, or more thinly inhabited than the parts visited by Cook and his companions. The presumption against its being much inhabited is strengthened by the total want of cultivation. The men were of a middle size, and in general well made, clean-limbed, and remarkably vigorous, active, and nimble: their countenances were not wholly without expression, and their voices remarkably soft and effeminate. The colour of the skin could not be well ascertained, on account of the dirt which uniformly covered it: with the dirt it was as black as that of a negro, and without it supposed to be of a chocolate colour. In other respects the accounts of our navigators materially differ from that of Dampier. They inform us that the features are not disagreeable, that their noses are not flat, and that their lips are not thick: their teeth are white and even, and their hair naturally long and black, though universally cropped short, and always matted and filthy; their beards are bushy and thick, but not suffered to grow long; both the hair and beard seemed to be kept short by singeing them. Both sexes go stark naked, without any apparent sense of indecency. Their principal ornament is the bone which they thrust through the cartilage that separates the nostrils: it is as thick as a man's finger, and being five or six inches long,

reaches quite across the face, and is an impediment both to their breathing and speaking. They had also necklaces made of shells, neatly cut and strung together: bracelets of small cord, twisted two or three times round the arm, and a string of plaited human hairs round the waist. They paint their bodies both white and red, the latter forming broad patches upon the shoulders and breast, and the former being drawn in stripes over various parts of their bodies. These people had no idea of traffic: they received what was given them, but had no idea of making a return, nor did they seem to have any disposition to steal: but if they were refused what they asked for, *e. g.* a turtle, they were enraged, and endeavoured to take it by force. On their bodies were visible scars, inflicted by blunt instruments, and which were understood to be memorials of grief for the dead. They appeared to have no fixed habitations, nor was there any trace of a town or village in the country. Their houses, when they had any, were mere hovels, constructed with pliable rods and covered with leaves of palm or broad pieces of bark: but in general they slept without any shelter, except the bushes, or grass, which is here near two feet high. Their fish-hooks are neatly made; and their lines, made of some vegetable substance, are from the thickness of a half-inch rope to the fineness of a hair. Their chief food is fish, and they occasionally kill a kangaroo and some birds: the only vegetable that forms an article of food is the yam. They dress their animal food by boiling, broiling, or baking it. As they have no nets, they catch fish only by sticking with an instrument of wood adapted to the purpose, or with a hook and line. They produce fire with facility, and spread it in a wonderful manner. To produce it they take two pieces of dry soft wood, one being a stick about eight or nine inches long, and the other a flat piece: the former is shaped into an obtuse point at one end, and pressing it upon the other, they turn it nimbly by holding it between both their hands, as we do a chocolate mill, often shifting their hands up and down, to increase the pressure. By this method they get fire in less than two minutes; and then spread it by means of the dry grass. The weapons of this people are spears, or lances, of different kinds, pointed with bone or shells, and barbed; and they throw them with great force and dexterity, either by the hand for short distances, or with an instrument contrived for that purpose: they have also shields or targets made of the bark of a tree. Their canoes are as rudely constructed as their houses, of bark or the trunk of a tree hollowed, probably by fire. They are moved with a pole or paddles, and some of them are fitted with an outrigger to prevent their upsetting: they are of different lengths and very narrow. The only tools which they seemed to possess was an adze made of stone, wedges of the same material, a wooden mallet, and some shells, and fragments of coral. For polishing the points of their lances, &c. they use the leaves of a kind of wild fig-tree. Each of their canoes carries four people.

The eastern coast of New Holland was carefully examined by Capt. Cook, and formally taken possession of in the name of the king of Great Britain in 1770. At the close of the American war, it was determined by the British government to make a settlement on this coast for the accommodation of transported felons. (See *BOTANY-bay*.) It appears from some further discoveries and reports, pertaining to this country, that it is peopled by three or four distinct races of men; those in the S.W. being different from those in the N., and both from those in the E. above described. They are merely divided into families, the former being styled *Be-ana*, or father, which is a title of respect; and each family or tribe has a distinct place of residence, distinguished by adding "gal" to the name of the place; *e. g.*, the southern shore of *Botany-bay*.

tany-bay being called "Gwea;" the tribe inhabiting it is denominated "Gwea-gal." Those who live on the north shores of Port Jackson are called "Cam-mer-ny-gal," Cam-mer-rhy being the name of that part of the harbour. This tribe, which is numerous and muscular, exercise the prerogative of exacting a tooth from young men of other families, in token of government or subordination. This tribute of teeth is paid in a solemn manner, and it is performed every four years. They manifest but very obscure traces of religion, though they have some faint ideas of a future existence in the clouds, whence they originally fell. They seem raised but one degree above the brute creation; and, like monkeys, they are great mimics. The deformity of their appearance, occasioned by their low stature and thin limbs, their black bushy beards, and the bone stuck in the cartilage of the nose, by an operation performed between the ages of eight and sixteen, is farther increased by their practice of rubbing fish oil into their skins as a protection from the air and musquitoes, and of colouring their faces with white or red clay. The women are marked by the loss of the two first joints of the little finger of the left hand, which, as well as the extraction of a tooth from the boys, is supposed to inure them to bear pain with apathy. It is said, however, that these joints of the little finger are parted with because they are in the way when they wind their fishing lines over the hands. Few instances of deformed persons occur. Their huts are commonly constructed of the bark of trees, in the form of an oven, having the fire at the entrance, and filled with smoke and nastiness, in which they sleep promiscuously. Their mode of courtship is not very gallant; as it consists in watching the lady's retirement, and then knocking her down with repeated blows of a club, or a wooden sword; after which the matrimonial victim is led, streaming with blood, to her future husband's party, when a scene ensues too shocking to relate. The men of one tribe seek wives among the women of another. The woman thus ravished is called a wife; and polygamy is common. Parturition is easy, and a few hours after the mother walks about her usual business. The infant is placed for a few days on a piece of soft bark; but is soon removed to the mother's shoulders with its legs across her neck, securing itself by catching hold of her hair. Superstition is very prevalent among these poor savages; they believe in magic, witchcraft, and ghosts, the latter being the night-mare. They have also spells against thunder and lightning, and pretend to foretel future events by the meteors called falling stars. They are subject to a disease resembling a violent itch; but for their venereal complaints they seem to have been indebted to Europeans. They have not only personal property in their weapons, and fishing tackle, but some are supposed hereditary properties of certain spots, perhaps assigned as rewards for public services, or acts of great bravery. They are represented, with regard to their habitual disposition, as revengeful, jealous, courageous, and cunning. If they were honest, when first visited by Europeans, they have since acquired the art of stealing; and they are said to be adepts in the arts of evasion and lying. Savage, as their state is, they are susceptible of friendship, and capable of feeling sorrow. They have names for the sun and moon, some few stars, the magellanic clouds, and the milky way. Young people are buried; but those who have passed the middle age are burnt; a rude tumulus being erected as a tomb. Mr. Collins, in his account of this island, has given an ample vocabulary of the language; which is said to be grateful to the ear, expressive, and sonorous, and to have no analogy with any other known language; but the dialects of the various regions seem to be entirely different. The seasons are like those of the southern part of

Africa and America; and as the country lies on the southern side of the equator, they are the reverse of those in Europe. The climate, however, is allowed to be very fine and salubrious. The rains are heavy, falling chiefly about the full and change of the moon, and at intervals there are storms of thunder and lightning. Of the lakes, rivers, and mountains of this extensive country, our information is hitherto very imperfect; but they may probably be found to be on a large scale. A chain of mountains is said to run N. and S. between 50 and 60 miles inland, but not easily accessible, on account of numerous deep ravines. Basaltic columns often appear; and in Howe's island they are said to rise so high, as to be visible at the distance of twelve leagues.

The whole of the S.W. coast of New Holland has been explored by D'Entrecasteaux; who has made correct charts of it, and other parts have also been investigated, so that in due time we shall have a more complete account of this extensive island, or group of islands, if, indeed, it consist, as some have suggested, of several. S. lat. about 11° to 39° . E. long. 113° to 156° .

HOLLAND, a township of America, in Hampshire county, Massachusetts, bounded S. by Holland county in Connecticut, E. by Worcester county, and northward by Brimfield, incorporated in 1785, and containing 445 inhabitants; 75 miles S.W. by W. of Boston.

HOLLAND, *Cape*, a cape in the straits of Magellan. S. lat. $53^{\circ} 57'$. W. long. $72^{\circ} 34'$.

HOLLAND'S *Islands*, islands of America, near to the S. of Hooper's island, in Chesapeake bay.

HOLLAND'S *Point*, a cape on the W. side of Chesapeake bay, which, together with Parker's island, forms the mouth of Herring bay.

HOLLAND *River*, a river of Upper Canada, running from the S.W., and discharging itself into Cook's bay, lake Simcoe.

HOLLANDEROCCELLER *IRSCHEAT*, a small island in the North sea, near the W. coast of East Greenland. N. lat. $60^{\circ} 38'$. W. long. $46^{\circ} 25'$.

HOLLATT, a town of Austria, on the Danube; six miles N.N.W. of Bruck.

HOLLEMOPPO, a town on the N. W. coast of the island of Timor. S. lat. 9° . E. long. $124^{\circ} 50'$.

HOLLENBACH, a town of Germany, in the principality of Hohenloe; 17 miles N.E. of Ohringen.

HOLLERIIUS, JAMES, or, in his native language, HOULLIER, in *Biography*, a French physician and surgeon, of some eminence in the sixteenth century, was born at Estampes, and took his doctor's degree in the faculty of Paris, of which he was elected dean in 1546. He obtained great reputation by the success of his practice both in medicine and surgery, and is said to have paid particular attention to render the mind cheerful under illness, with a view to facilitate the cure of corporeal diseases. He was the author of several works, none of which he published himself. Some were printed during his life under the superintendance of his pupils, and some after his death, which happened in 1562. Among his works were commentaries on the books of Galen "De Compositione Medicamentorum," and on the Aphorisms of Hippocrates; likewise a treatise "De Materia Chirurgica," in three books, which went through numerous editions, in some of which the title of "Institutiones Chirurgicae" was adopted; "De Morborum curatione, &c." 1565; and "De Morbis internis Libri duo," 1571, which was frequently reprinted. Eloy. Dict. Hist.

HOLLES, DENZIL, *lord*, second son of the first Holles, earl of Clare, was born in 1597. He was liberally educated,

ated, and when his father had a place at court he was for a time companion and bed-fellow to prince Charles, then duke of York. When he attained to a proper age he sat in parliament as member for St. Michael's, Cornwall, and sided with the opposition party. At the accession of Charles I. he refused the offer of a knighthood of the Bath, and in the parliament of 1627 he was, owing to the interest which he had acquired by his marriage, returned for Dorchester, and took a leading part in favour of liberty. When the three resolutions of the commons against Popery, Arminianism, and the levying of tonnage and poundage by the king's prerogative, were drawn up, he was one of the two who forcibly held the speaker in his chair till they were passed. For his conduct on this occasion he was prosecuted, and condemned to a fine and imprisonment in the Tower, where he remained twelve months. Irritated by this treatment, and fixed in his principles, he entered the long parliament in 1640, a determined foe to the court, and by the vigour and abilities which he manifested, he was placed at the head of the Presbyterian party. His relationship with the earl of Strafford preventing him from taking a part against that nobleman, he carried up the impeachment of archbishop Laud. He was one of five members accused by the king of high treason in 1641, and the attempt at seizing them was the immediate cause of taking up arms. In the ensuing war the parliament gave him the command of a regiment, and appointed him lieutenant of Britol. Mr. Hollis, however, soon saw through the designs of the independent party, and with the view of frustrating them he endeavoured to promote a treaty with the king. At length he was obliged to escape to France to avoid a prosecution for high treason from the party with whom he had acted. By the interposition of his friends he was allowed to return in 1648, when he resumed his seat in parliament, and was one of the persons appointed to treat with the king in the Isle of Wight. He was not prepared to go to all the lengths of his party, and was again obliged to quit the country to ensure the safety of his person. He took up his abode in Brittany, where he continued till the year preceding the restoration, which event he had used all his influence to promote. On the restoration he was advanced to the peerage by the style of lord Holles of Isfield, in the county of Suffex. He was now employed by the court in various negotiations, but his attachment to the principles of liberty remained unabated, and when the politics of the reign tended to render the king absolute, he appeared as a leader in opposition. No man had a more disinterested love of his country than lord Holles, a proof of which was exhibited, when offered by parliament 5000*l.* as a reparation for the losses which he had sustained in the civil war: "I will not," says he, "receive a penny till the public debts are paid." He died in 1679, in the 82d year of his age. He was buried in Dorchester church, where a monument was raised by his great nephew John duke of Newcastle. Biog. Brit. Hume.

HOLLES, in *Geography*, the *Nisistiffet* of the Indians, a township of America, in Hillsborough county, New Hampshire, on the Massachusetts's line, incorporated in 1746; about 70 miles S.W. of Portsmouth, and containing 1557 inhabitants.

HOLLFELD, a town of Bavaria, in the bishopric of Bamberg, in the Wisent; 15 miles E. of Bamberg.

HOLLI, the Indian name for what the Spaniards call *ulli*; a resinous liquor, which flows spontaneously from the tree *bolquagbuzyl*, or *chilli*. It is often mixed with chocolate in the making, in the proportion of one fourth part; it gives the chocolate in this case no very disagreeable flavour; and becomes a very powerful medicine in dysenteries. It is

usual, however, before the making it, to mix the cacao and holli on an iron plate, and torrify them thoroughly together.

HOLLIS, THOMAS, in *Biography*, was born at London in April, 1720. Being designed for commercial life, he was sent, when about 14 years of age, to Amsterdam, for the purpose of learning the French and Dutch languages, and merchants' accounts. Soon after his return, in 1735, his father died, and as he was now heir to a large estate, it was resolved to complete his education on a liberal plan. With this view he was placed under the care of Dr. Ward, professor of rhetoric in Gresham college, with whom he studied the learned languages, and other branches of literature. In 1740 he took chambers in Lincoln's Inn as a law student, and probably with some view of following the profession, but though he lived there eight years, it does not appear that he applied himself, professedly, to the study of the law. He did not, however, waste his time in idle amusements and dissipation; he had already formed an acquaintance with persons eminent for their attachment to liberty; and had imbibed their principles, which strongly marked his character through life. Even when a boy at school, he was interested in the noble deeds of the heroes of antiquity, "I used," said he, "to rob nature of her self to read Plutarch, honest Plutarch, and read again the lives of his heroes. To him, I owe, I willingly confess, the finest dispositions of my mind." In 1748 he set out on a tour upon the continent, and the journal which he kept while he was absent proves that he suffered nothing worthy of observation to escape his notice. In 1750 he made a second tour, and finding on his return that he could not gratify his wish of serving his country, by entering into parliament, without compliances which were contrary to his principles, he began to make a collection of books and medals for the purpose of preserving the memory of the champions of liberty; and, in general, for the service of science and art. It was also one of his leading objects to print, and present to his friends, books favourable to the popular principles of government. Milton and Algernon Sidney were the authors that attracted his principal admiration. He investigated with great minuteness the history of Milton and his works, and caused engravings to be made of his portrait taken at different periods. The particulars of Mr. Hollis's life are little more than a list of generous and public spirited actions, either for the relief and encouragement of individuals, or for the promotion of what he considered the most important interests of mankind. There were few useful and benevolent institutions of which he was not a member, and a liberal patron. The books which he published, or procured to be published, were "Wallis's Grammar of the English Language;" "Locke on Toleration and Government;" "Sydney on Government;" "Needham's Excellency of a free State;" "Neville's Plato Redivivus;" and "Staveley's Romish Horfeleach." He like wise caused several pamphlets from America to be reprinted at his own expence. He encouraged the printing of other works favourable to liberty, by taking large numbers of copies and distributing them as presents. His munificence in this respect contributed very much to extend the knowledge of English literature and English generosity through foreign countries. In 1770 he retired into the country, where he employed himself in improving his estate at Corscombe in Dorsetshire. He kept many workmen constantly employed in his service, to some of whom he was giving directions on New Year's day 1774, when he dropt down in a fit and immediately expired. Mr. Hollis, says one of his biographers, was of an athletic make, inclined to corpulence, which he counteracted by great abstemiousness of diet, and strong exercise. He allowed

allowed himself scarcely any of the indulgencies of a man of fortune, and opposed the growing luxury of the age, as well by his example as by his precepts. His particular sentiments with regard to religion were known to himself only. He joined no sect, and attended no place of worship, but his diary contains a multitude of proofs of his veneration and gratitude to the Supreme Being. He was, in every respect, an universal philanthropist; and it was said of him, "that in his death Liberty lost her champion, Humanity her treasurer, and Charity her steward." *Hollis Memoirs*, 2 vols. 4to. 1780.

HOLLISTON, in *Geography*, a township of America, the most southerly in Middlesex county, Massachusetts; 28 miles S. by W. of Bolton, incorporated in 1724, and named in honour of Thomas Hollis, esq., of London, and now containing 783 inhabitants.

HOLLMAN, SAMUEL CHRISTIAN, in *Biography*, was born at Stettin in 1696, where he received the elementary principles of a learned education. His maturer studies he pursued at Wittenburg, took his degree of M. A. in 1720, and for a short time he read lectures at Greifswald and Jena. In 1734 he was invited to be public professor of philosophy in the university of Gottingen, then lately founded, and upon the establishment of the society of the sciences he was the first regular member of the philosophical class. Here he continued his lectures till the year 1784, when he resigned the duties of his office. He died in 1787. The university of Gottingen was under vast obligations to this learned man, who with Haller contributed to diffuse through Germany a taste for natural philosophy and natural history. On these subjects he published several excellent papers in the transactions of the royal societies of Gottingen and London. He likewise distinguished himself by various elementary works and dissertations, which are enumerated in the *General Biography*, to which the reader is referred.

HOLLOA, in *Sea Language*, is an exclamation of answer to any person who calls to another to ask some question, or to give a particular order. It is also the first answer in hailing a ship at a distance.

HOLLOLA, in *Geography*, a town of Sweden, in the province of Tavastland; 30 miles E. of Tavasthus.

HOLLOW, in *Architecture*, a concave moulding, about a quadrant of a circle, by some called a *casement*, by others an *abacus*.

HOLLOW-quoins, in *Engineering*, are piers of stone or large bricks made on purpose behind each lock-gate of a canal, which are formed into a hollow from top to bottom to receive the rounded head of the lock-gates: in some instances the hollow-quin is formed of one piece of oak cut to the proper shape and fixed vertically against the wall, and even cast iron has been used, on some recent occasions, for forming the hollow-quin or hinge for the lock-gates of large canals, or the entrance basons to docks. See our article **CANAL**.

HOLLOW Roots, in *Botany and Gardening*. See **FUMARIA**.

HOLLOW Square, in *Military Language*, is a body of foot, drawn up with an empty space in the middle, for the colours, drums, and baggage; facing and covered by the pikes every way, to oppose the horse.

HOLLOW Tower, in *Fortification*, is a rounding made of the remainder of two bastions, to join the curtain to the orillon, where the small shot are played, that they may not be so much exposed to the view of the enemy.

HOLLOW-toothed Horse, in the *Manège*. See **SHELL-toothed**.

HOLLOWS, in *Mining*, denote the wastes, gobbins, or

old hollows in coal-pits, from whence the coals have been wrought or gotten. The old hollows in many coal works generate *Damps* (see that article), or foul air, which is very prejudicial to the works; and, in some instances, the waste coals in them are fired by the pyrites, duns, and other self-inflaming substances among them, if the air be not excluded from these hollows; as at Donithorpe colliery, in Derbyshire, and others near Dudley, in Staffordshire. See *Farey's Derbyshire Report*, vol. i.

HOLLOWNESS of TREES. This is one of the most mischievous diltemperatures to which trees are subject. It is generally occasioned by the lopping of them in an improper manner, and leaving the wet to fall in upon them, especially on their heads. When this mischief is found out in its beginning, the only method is to cut the trunk off to the quick, sacrificing the whole hollow part; it is, in this case, to be cut off sloping, that the wet may run off from it. All soft woods are liable to this mischief; after the lopping, particularly the elm; and when it takes hold of any tree, it grows upon it daily, till the whole substance of the tree is at length eaten away, and only a coat of bark is left. The best way of preventing it in the elm, is never to cut off the head or top of the tree at all, but only to lop the side branches: these will yield a very large quantity, and the body of the tree will thrive the better for their being often cut off, and will be good timber at last. These tall elms sometimes grow hollow from another cause, that is, from the decay of some of the large roots; but the starving condition of its branches will shew this, though there be no external mark of it. This sort of hollowness always begins at the bottom of the tree. Blasted parts of the trees are to be cut away to the quick, in the same manner as the hollow ones, and the wounds will heal in the same manner.

HOLLS, in *Geography*, a lake of Norway, in the diocese of Aggerhuus; 70 miles N. of Christiania.

HOLLY, in *Botany and Gardening*. See **ILEX**.

The common holly is often found useful as a hedge plant. It is a plant which on good, dry, loamy soils, grows to a considerable size; but which on poor wet soils seldom becomes more than a low shrub. It has been recommended as making an impenetrable fence, and as bearing to be cropped with but little injury; and that sheep are capable of being fed in the winter with the croppings; while birds consume the berries. The bark, when fermented, and then washed from the woody fibres, constitutes the common bird-lime. And the beauty of its scarlet berries are asserted never to suffer from the severest of our winters. The wood is found excellent for veneering; being occasionally stained black in imitation of ebony. (See **MARQUETRY**.) It is useful for the handles of knives, as well as the coggs of mill-wheels. Provincially it is not unfrequently denominated *Hollin*.

A late writer contends, that "no plant makes so good a hedge as holly; if preserved with any attention in its infancy it will, in a few years, be impenetrable to man or beast. It often fails from being planted at an improper season; for there is not the least certainty of any success, except by planting about Midsummer. The plants should be from six to nine inches high, and well rooted: they should not be let into the sloping face of a bank, but on a level tablet left for that purpose, and well defended on both sides, to keep both sheep and hogs from it." This is one of those plants that may likewise be intermixed with the white thorn in the constituting of hedge fences, and which by its mixture renders them still more beautiful. See **FENCE** and **HEDGE**.

HOLLY,

HOLLY, *Knee*, in *Botany and Gardening*, and the *Materia Medica*. See **RUSCUS**.

HOLLY, *Sea*, the name by which some call the *eryngium* of botanical writers. See **ERYNGO**.

HOLLY-wood, *Petrified*, in *Natural History*. In the accounts which are given in the Philosophical Transactions, N^o 158, of the supposed petrifying qualities of the waters of Lough Neagh in Ireland, some of the pieces of petrified wood found in its banks are denominated *holly*; but apparently for no better reason, than because they were white: correct observations have never, we believe, detected holly or any other recent species of wood in the strata: the leaves and twigs of holly observed by Dr. Correa de Serra, on the coast of Lincolnshire, evidently belong to the recent or peat fossils, and not to those of the strata.

HOLLY-HOCK, in *Botany and Gardening*. See **ALCEA**.

HOLLYMOUNT, in *Geography*, a small post-town of the county of Mayo, province of Connaught, Ireland, situated on the river Robe. It is on the road from Dublin to Castlebar through Tuam, and is 107 miles W. by N. from Dublin, and 14 from Castlebar.

HOLM, **HULMUS**, signifies as much as *insula amnica*, a river island, according to Bede; or a plain, grassy ground, upon the water-side, or in the water, according to Camden.

Where any place is called by the name holm, or where this syllable is joined with any other in the name of a place, it signifies it to be surrounded with waters. As the *flatholms*, the *stepholms*, near Bristol. If the situation of the place be not near the water, it may signify a hilly place; for holm, in Saxon, also signifies a *hill*, or *cliff*.

HOLM, or *Holme*, in *Agriculture*, the common name of a low, flat, rich tract of land, which usually lies on the border of a large river. This sort of land is fit for almost any sort of culture, but particularly so for those of pasture, feeding, and hay. See **HOLM Land**.

HOLM Land, that description of rich ground which is met with on the sides of large streams of water. This is obviously a water-formed kind of land, being gradually constituted by time from the frequent depositions of the rivers or streams during the periods of their being covered by the floods proceeding from them. This is very clear from the circumstance of such sorts of land being uniformly found on the banks of such streams as have a slow, smooth course, and which are liable to be overflowed by them. Where such streams are usually discharged into larger and more expanded spaces of water, it is common to find the more valuable kinds of this sort of land. In some particular cases of this description of land, it is not unusual to find the soil approaching, in some measure, to that of a clayey quality; but which, when properly freed from water, and subjected to good cultivation, speedily becomes excellent land. Indeed all these sorts of lands are in general well suited either for the growth of grass or grain, mostly producing heavy crops of the latter as well as the former; but from their being in most instances subject to be overflowed, they are probably more proper for being kept under the grass system.

HOLM Oak. See **QUERCUS**.

HOLM, in *Geography*, one of the smaller Orkney islands, one mile E. of Westra.—Also, a small island between Pomona and Hoy.—Also, a small island, two miles W. of Eda.—Also, a small island, on the coast of Essex, in a large bay. N. lat. 51° 53'. E. long. 1° 10'.—Also, a town of Sweden, in the province of Angermannland; 40 miles N.N.W. of Hernofand,

HOLM Kirk, a town of the island of Pomona; nine miles S.E. of Kirkwall.

HOLME. See **HOLM**.

HOLMES, *Flat and Steep*, in *Geography*, two small islands situated in the British channel, between Glamorgan-shire and Somersetshire. The former contains about 60 acres of land, and is distinguished for its light-house. Several pilots reside on it. The Steep Holmes is a small rocky island, the highest point of which rises 400 feet above the level of the sea. It is almost divested of vegetation, but is the resort of large flocks of sea fowls during the summer season. This solitary and inhospitable spot is said to have been a place of refuge to the ancient British historian, Gildas, who hoped thus to preserve his life from the marauding Picts and Scots. He afterwards retired to Glastonbury.

HOLMES's Hole, a commodious and safe American harbour, in Duke's county, Massachusetts, on the N. side of Martha's Vineyard; 98 miles S.E. of Boston.

HOLMESTRAND, a town of Norway, in the province of Aggerhuus; 30 miles S. of Christiania. N. lat. 59° 30'. E. long. 10° 30'.

HOLMON, a small island on the W. side of the gulf of Bothnia. N. lat. 63° 48'. E. long. 20° 37'.

HOLMSKIOLDIA, in *Botany*, was named by professor Retzius of Lund, in honour of a Danish nobleman, Theodore Holm, afterwards Holmskiöld, who wrote a treatise in Danish on *Anagallis*, in 1761, and a splendid folio in Latin and Danish on *Fungi*, explaining the structure of the *Clavaria* and some of their allies, published at Copenhagen in 1790. He was born in 1732 and died in 1794, according to Dryander's *Bibl. Banks*, v. 5. 287.—Retz. *Obs. fasc.* 6. 31. Willd. *Sp. Pl.* v. 3. 360. (*Haltingia*; Sm. *Exot. Bot.* v. 2. 41. *Intr. to Bot.* 403. See **HASTINGIA**.)—Class and order, *Didynamia Gymnospermia*. Nat. Ord. *Verticillate*, Linn. *Labiata*, Juss.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, very large, coloured, turbinate, gradually expanding into a wide bell-shaped limb, with five shallow, equal, unarmed lobes. *Cor.* of one petal; ringent, tubular; tube longer than the calyx, swelling upwards; upper lip shortest, ascending, cloven, obtuse; lower in three rounded lobes, the middle one largest, entire. *Stam.* Filaments four, thread-shaped, rather longer than the upper lip, two of them shorter than the rest; anthers incumbent, roundish, simple. *Pist.* Germen superior, four-cleft; style the size of the stamens and situated between them, its summit bent downward; stigma in two sharp lobes. *Peric.* none, except the faded, scariose, permanent calyx. *Seeds* four, naked, in the bottom of the calyx, somewhat obovate, rugged.

Eff. Ch. Calyx bell-shaped, dilated, much wider than the corolla, coloured, in five shallow, equal, unarmed lobes.

1. *H. sanguinea*. Retz. and Willd. as above. (*Haltingia coccinea*; Sm. *Exot. Bot.* v. 2. 41. t. 80.)—Gathered by Koenig and by lieutenant-colonel Thomas Hardwicke, in vallies among the mountains of the north part of Bengal, flowering in February or March, and ripening seed in April. It is called by the people of the country *Ghurhulpabaria*, a name almost as difficult of pronunciation as *Holmskioldia*, which we are told is spoken as if it were written *Holmsculdia*, to the no small comfort of those who, like us, are forced to adopt it, in justice to its meritorious prototype, and those who have delighted to honour him. The original appellation of this new and curious genus, given by Koenig, *Haltingia*, was retained in the Exotic Botany, because the writer of that work could have no suspicion of any one's having committed so great an error as to place this plant in the order

Angiospermia, its characters and affinity being so manifestly near *Phlomis* and *Moluccella* in the *Gymnospermia*. It was, therefore, concluded to be unpublished.

The only known species of this genus is a very handsome shrub, whose stem is smooth, roundish, with many opposite branches. *Leaves* opposite, on furrowed stalks, without stipulas, ovate, pointed, veiny, two or three inches long, slightly ferrated, almost perfectly smooth, dotted on both sides, paler beneath. *Flowers* in terminal, loose, bracteated bunches, of a vivid scarlet. *Flower-stalks* downy. *Calyx* an inch wide, veiny, slightly downy, as richly coloured as the corolla, which is also pubescent, longer than the calyx, but much narrower, as in *Moluccella*. *Seeds* black.—This plant would be a great ornament to our stoves, and might probably succeed in a conservatory with less heat than tropical vegetables generally require.

What the worthy Retzius saw when he examined "a half-ripe capsule" of this shrub, in which he "manifestly observed several seeds, but could not absolutely judge whether it were unicapsular (meaning unilocular) or not," we are utterly unable to imagine.

HOLO, in *Geography*, a town of Sweden, in Sudermanland; 24 miles S.W. of Stockholm.

HOLOCAUST, Ὁλοκαυτωσις, formed from ὅλος, whole, and καίω, I consume with fire, a kind of sacrifice, wherein the whole offering is burnt or consumed by fire; as an acknowledgment that God, the Creator, Preserver, and Lord of all, was worthy of all honour and worship, and as a token of men's giving themselves entirely up to him. It is called also, in scripture, a burnt-offering.

Sacrifices of this sort are often mentioned by the Heathens as well as Jews; particularly by Xenophon, *Cyropæd.* lib. viii. p. 464. ed. Hutchins. 1738, who speaks of sacrificing holocausts of oxen to Jupiter, and of horses to the sun; and they appear to have been in use long before the institution of the other Jewish sacrifices by the law of Moses. Accordingly, we find this kind of sacrifice was offered by Noah and Abraham, and also by Job, and Jethro, the father-in-law of Moses. See Job, i. 5. chap. xlii. 8. Gen. xxii. 13. chap. viii. 20. On this account, the Jews, who would not allow the Gentiles to offer on their altar any other sacrifices peculiarly enjoined by the law of Moses, admitted them by the Jewish priests to offer holocausts; because these were a sort of sacrifices prior to the law, and common to all nations. During their subjection to the Romans, it was no uncommon thing for those Gentiles to offer sacrifices to the God of Israel at Jerusalem. Vide Philo. *Opera.* p. 801. E. Ed. Colon. Allobr. 1613. Tertullian. *Apolog.* § 26. p. 26. ed. Rigalt. 1675.

Holocausts were deemed by the Jews the most excellent of all their sacrifices. It is said, that this kind of sacrifice was in common use among the heathens, till Prometheus introduced the custom of burning only a part, and reserving the remainder for his own use.

HOLOGNE-AUX-PIERRES, in *Geography*, a town of France, in the department of the Ourte, and chief place of a canton, in the district of Liege. The place contains 678, and the canton 17,815 inhabitants, on a territory of 147½ kilometres, and 30 communes.

HOLOGRAPHUM, composed of ὅλος, all, and γραφω, I write, in the *Civil Law*, something written wholly in the hand-writing of the person who signs it.

The word is chiefly used in speaking of a testament, written wholly in the testator's own hand. See TESTAMENT.

The Romans did not approve of holographic testaments; and, though Valentinian authorized them by a novel, they are not used where the civil law is in full force.

HOLOKLUB, in *Geography*, a small island on the W. side of the gulf of Bothnia. N. lat. 60° 51'. E. long. 17° 7'.

HOLOMETER, composed of ὅλος, all, and μετροω, I measure, a mathematical instrument serving universally for the taking of all sorts of measures, both on the earth and in the heavens.

The holometer is the same with what is otherwise denominated *pantometer*; which see.

HOLOMIN, in *Geography*, a small island of Scotland, near the W. coast of the island of Mull.

HOLOSERICA VESTIS, a garment entirely of silk, as the name imports, which was not used at Rome till the time of Heliogabalus.

HOLOSIE, in *Geography*, a town of Austrian Poland, in Galicia; 40 miles W.N.W. of Lemberg.

HOLOSTEMMA, in *Botany*, from ὅλος, entire, and στεμω, a crown, because the crown of the stamens is a simply annular undivided body. Brown *Aclep.* (from Tr. of the Wernerian Society, v. 1.) p. 31.—Class and order, *Pentandria Digynia*. Nat. Ord. *Contorta*, Linn. *Asplonea*, Juss. *Aclepiadeæ*, Brown.

Ess. Ch. Corolla somewhat wheel-shaped, five-cleft. Crown of the stamens inserted at the bottom of their tube, simple, annular, entire. Anthers terminated by a membrane; masses of pollen pendulous, compressed, attached by their slender summits. Stigma pointless. Follicles swelling, smooth. Seeds with a hairy crown.

The only species indicated by the author is the *Adakodien*, Rheede Hort. Malab. v. 9. t. 7, found in the East Indies. This is a twining smooth shrub. The leaves are opposite (erroneously drawn alternate in the figure), stalked, crossing each other in pairs, heart-shaped, three or four inches long, entire, soft, smooth, milky, but not acrid. *Flowers* inodorous, in sessile axillary umbels, large and handsome, variegated with green and white, streaked with purplish red. *Follicles* three or four inches long, half-ovate, pointed, filled with innumerable imbricated seeds.

HOLOSTEUM, has been supposed by some authors to have been derived from ὅλος, the whole, and ὀστέον, bony, thus, by antiphrasis, alluding to its extreme delicacy and tenderness of structure. An attentive perusal of Dioscorides seems rather to favour a different explanation, for he speaks of his ὀστέον as a consolidating herb, which its name, from ὀσ, or ὀλος, entire, sane, or perfect, might possibly imply. Linn. Gen. 42. Schreb. 57. Willd. Sp. Pl. v. 1. 488. Mart. Mill. Dict. v. 2. Sm. Fl. Brit. v. 1. 161. Juss. 299. Lamarck. Dict. v. 3. 135. Illustr. t. 51. Gærtn. t. 130.—Class and order, *Triandria Trigynia*. Nat. Ord. *Caryophyllei*, Linn. *Caryophylleæ*, Juss.

Gen. Ch. Cal. Perianth of five, ovate, permanent leaves. Cor. Petals five, unequally jagged, obtuse, all equal in length. Stam. Filaments three, thread-shaped, shorter than the corolla; anthers roundish. Pist. Germen nearly round; styles three, thread-shaped; stigmas rather obtuse. Peric. Capsule of one cell, somewhat cylindrical, gaping at the top. Seeds six, or more, roundish.

Ess. Ch. Calyx five-leaved. Corolla of five unequally-jagged petals. Capsule nearly cylindrical, bursting at the top.

Obs. The petals of *Holosteum* are described by authors in general as bipartite, or deeply cloven, and sometimes trifid; but Dr. Smith has suggested (in his *Prodromus Floræ Græcæ*, v. 1. 303.), that the petals *erosa*, if constant to this genus, as he suspects they are, may afford an excellent essential mark. Schreber has observed, that in *Holosteum umbellatum* the petals are doubly or triply toothed, and in

succu-

succulentum they are described as subtrifid. In *cordatum* we find them sometimes slightly emarginate, sometimes entire, in the same flower. In Swartz's *diandrum* they are said to be deeply divided.

1. *H. cordatum*. Linn. Sp. Pl. 130. (Alfina americana, nummularia folio; Herm. Parad. Batav. t. 11.)—Leaves nearly heart-shaped. Stipulas four on each side.—Native of Jamaica and Surinam.—Stems decumbent, creeping, roughish at the lower part. Leaves opposite, roundly cordate, smooth, almost sessile. Stipulas membranaceous. Peduncles lateral, elongated, ascending, about seven-flowered, the partial stalks falling with the fruit when ripe.

2. *H. diandrum*. Willd. n. 2. Swartz. Prod. 27. Ic. t. 7.—Stems procumbent, rather rigid. Leaves roundish. Flowers diandrous. An inhabitant of Jamaica.—Radicles capillary, whitish. Stem much branched, straight, smooth. Leaves opposite, entire. Stipulas hairy, at the base of the flower-stalks. Capsule roundish, or slightly triangular.—Professor Swartz remarks that this is distinct from the last species, being altogether a much smaller plant; but upon comparing his plate with the Linnæan specimen of *H. cordatum*, it appears that the latter is extremely variable in size, and therefore this circumstance is not sufficient to make them distinct species. Neither are the diandrous flowers a proper distinctive mark, because *H. umbellatum* frequently varies in having from three to ten stamens.—We, therefore, only adopt this species on the authority of Swartz. The petals of *H. cordatum* are often as deeply divided as those of *diandrum* are represented.

3. *H. succulentum*. Linn. Sp. Pl. 130. Amœn. Acad. v. 3. 21.—“Leaves elliptical, fleshy.”—Native of New York.—Flowers white; petals subtrifid, smaller than the calyx.

4. *H. hirsutum*. Linn. Sp. Pl. 130. Amœn. Acad. v. 3. 21.—“Leaves orbicular, hairy.”—A native of Malabar.—There are no specimens either of this or the last species in the Linnæan Herbarium, nor are they any where figured.

5. *H. umbellatum*. Linn. Sp. Pl. 130. Engl. Bot. t. 27.—“Flowers in umbels.”—This is rather a scarce plant, found on old walls, flowering early in the spring.—It was first detected in England by Mr. Pitchford in the year 1765, on walls in the neighbourhood of Norwich.—The plant is in general smooth, somewhat glaucous. Stem branching at the base, towards the top hairy and viscid. Leaves opposite, ovate, acute. Umbel simple, terminal. Peduncles bracteated, divaricated when the fruit is ripe. Flowers white or bluish-coloured. Capsule six-toothed. Stamens varying from three to ten in number.

This is the only British species of *Holosteum*. It approaches very closely in habit to *Cerastium*, and was placed in that genus by Mr. Hudson; but its petals being unequally jagged, and not bifid, warrant its continuance in *Holosteum*.

HOLOTHURIA, in Zoology, a Linnæan genus of the Mollusca tribe of worms, the body of which is detached, cylindrical, thick, naked, open at the extremity, and the mouth surrounded by fleshy tentacula or feelers.

This character associates in the same family a number of animals so different in form, that it appears scarcely possible to admit the genus without some further modification. It is true that all the species referred to it by Linnæus and Gmelin are not described with equal accuracy by their respective observers, and this consideration should induce us to speak with caution as to the propriety of reducing some particular kinds to the new genera proposed by subsequent authorities. This is not, however, the case with all; many have been examined in their native element, and in a living state with unquestionable care, and their organization ex-

plained in a satisfactory manner; upon these, therefore, we are enabled to pronounce an opinion, and confining our attention to these only we cannot hesitate to believe that the Linnæan holothuriæ are divisible in a natural arrangement into three, if not a greater number, of distinct genera.

The last edition of the “*Systēma Naturæ*” contains altogether twenty-three supposed species of the holothuria, but it is to be observed that Gmelin himself affixes some mark of doubt as to the identity of the true genus to which certain kinds belong; and this not without reason, since it is clear their essential character cannot be reconciled with the natural character of the holothuria tribe in general.

Perhaps Linnæus, in the establishment of his genus holothuria, rejected the ideas of Forskal without sufficient consideration. Forskal, we find from the result of his own observations on the vermes found in the Arabian seas, conceived he had discovered, among others, two natural families of these marine bodies, and proposed for their reception the institution of two new genera, to which he applied the insignificant appellatives of priapus and siltularia; these Linnæus assigned to his genus holothuria, and in consequence most probably of his example those genera have never been adopted.

Again, the thalia or thalis genus, suggested by Brown, is consolidated by Linnæus with the holothuria. It is probable we may not at present so clearly understand the thalis tribe as to be enabled to form a very positive conclusion as to its essential characters, though we may, nevertheless, observe, that it does not seem to appertain to the holothuria tribe, being more closely allied to that of salpa. The observations of Bosc are calculated to prove the animals of the thalis kind to be truly salpæ, and which, if accurate, must occasion the removal of some Gmelinian species of the holothuria to that genus, as the thalia, caudata, and denudata. Lamarck, however, conceives them equally distinct from the holothuriæ and the salpæ, and for this reason re-established the genus thalis as originally proposed by Brown.

As to the propriety of adopting the genus physalidis there cannot, we imagine, be any difference of opinion; it is evidently distinct from the holothuria.

And, lastly, we should mention the genus velella, one of those newly instituted by the French naturalists, and which tends to unite the holothuriæ with the medusæ by forming an intermediate link between them, and still connecting both. The genus contains two species, namely, the *Velella mutica* referred by the Linnæan classification to the medusa tribe under the specific name of velella, and the holothuria tentaculata of Forskal.

Having pointed out the number of new genera into which the Linnæan holothuriæ are divided by later naturalists, it will be proper to state in what material particulars their essential characters differ from each.

The true holothuriæ have the body detached, cylindrical, thick, very contractile, with a coriaceous skin, and having at the extremity a mouth armed with five calcareous teeth, and a radiation of ramose or pinnate tentacula. The genus thalis has the body detached, gelatinous, oval, or oblong, compressed at the sides, and the back either destitute of the crest, or furnished only with a very short one, and placed near one extremity; no tentacula under the belly. In the physalidis or physalia, the body is detached, membranaceous, or gelatinous, oval, compressed at the sides, the back furnished with a crest, and the under part of the belly with a great number of diversely formed articulated tentacula of different lengths, apparently suckers. The body of the velella is detached, elliptic, cartilaginous within, the exterior part gelatinous, and having upon the back an elevated

HOLOTHURIA.

truncated crest placed obliquely; the mouth beneath and situated in the centre. According to the above characters the Gmelinian species, *elegans*, *pentactes*, and *priapus*: *forcipata* of O. Fabricius; *zonaria* of Pallas; and *maxima* of Forsskal are all of the holothuria genus. The three kinds described by Brown, *thalia*, *caudata*, and *denudata*, constitute the genus *thalis*. The Linnæan species *physalis* (*Physalis pelagica* of Osbeck) is the only example of the genus *physalidis*. And the holothuria tentacula of Forsskal is the *velella*.

These animals are of the marine kind, and in general supposed to be viviparous; they live on small fishes, worms, testaceous bodies, &c. and are usually distinguished by the splendour of their colours.

Species.

ELEGANS. With twenty branched tentacula; body papillose, reddish above, beneath white. Müll. Stroem. Sondm. &c.

Inhabits the seas of Denmark and Norway; the length from eight to eleven inches; body varied with red and white; papillæ pointed, and distant, those on the back disposed in six series; tentacula fleshy, and white, the tip furnished with a tuft of fibres which are tuberculated within. Squirts out water like a siphon from the lower orifice.

FRONDOSA. Tentacula frondose; body smooth. O. Fabr.

The body ovate; beneath flat, with ten retractile tentacula; the posterior part conic, perforated at the end. Found in the northern seas.

PHANTAPUS. Tentacula branched; posterior part of the body attenuated; beneath rough with dots. Müll. *Holothuria phantapus*, Linn. *Pudendum missum*, &c. Aldr. Gefn. &c.

Native of the Norway and Mediterranean seas. The body is ovate, beneath flat; behind conic, with the tip perforated, tentacula 10, and retractile.

TREMULA. Tentacula fasciculate; body covered above with numerous sub-conic papillæ, beneath with cylindrical ones. *Holothuria tremula*, Linn. *Holothuria tubulosa*, Gmel. *Holothurius Rondeletii*, Jonst. *Epipetro zoographi simile*, Aldr. *Genitale marinum*, Bell. *Pudendum regale piscatorium*, Column. *Mentula marina*, Plancus. *Fistularia*, Forssk.

Found in the Mediterranean and Adriatic seas. Length one foot; the body cylindrical when extended, and oblong when contracted, generally a beautiful mixture of red and white, but it varies in colour; the cylindrical tubes beneath the body act as suckers, by means of which it adheres to the rocks.

PHYSALIS. Cirri filiform, pendulous, and of different shapes. Linn. *Urtica marina*, Sloane. *Aretbusa cristata*, &c. Brown. *Physalis pelagica*, Osbeck.

Inhabits the Atlantic seas, where it is often seen floating in calm weather on the surface of the water, and is known to mariners by the name of the Portuguese man of war; the form ovate, somewhat triangular, and hyaline; back acute and dusky green; anterior part reddish; snout spiral and reddish; tentacula numerous, unequal, some round, thick and short; some capillary, with a globular yellow tip, others longer and filiform.

THALIA. Crest compressed; lateral lines entire. Gmel. *Thalia oblonga*, &c. Brown. Jam.

Native of the American and West India seas.

CAUDATA. Tailed; crest compressed; lateral lines interrupted. Gmel. *Thalia oblonga, caudata*, &c. Brown.

Inhabits the American seas.

DENUDATA. Destitute of crest and tail. Gmel. *Thalia*, &c. Brown.

The body of this species is oblong, rounded, and gradually tapering to both extremities; the length from three to four inches, diameter one inch; transparent, and hollow; the anterior opening triangular, the other rounded. Native of the American seas.

PENTACTES. With ten ramified tentacula; body with five rows of papillæ. Müll. *Cucumis marinus*, Gefn. *Cucumer marinus*, Vandell. *Aphrodita quarta*, Hill. *Brimbatas*, Olaff. *Fleurilarde*, Dicquemar.

Length six inches; the body greenish-brown; tentacula elegantly ramified, of a yellow and silver colour; the filaments with small retractile filaments issuing from them. Inhabits the seas of Europe.

PAPILLOSA. With ten frondose tentacula; body ovate, and covered every where with papillæ. Müll. Inhabits the bays of the North seas.

SPALLANZANI. With ninety-six filamentous tentacula. Spallanz. Native of the Mediterranean.

PRIAPUS. Mouth with fleshy papillæ; body with annular striæ, and longitudinal ones on the gland. O. Fabr. *Priapus*, Linn.

Inhabits the Indian and Mediterranean seas; the length six inches. One half of the body cylindrical, with numerous annular striæ, and terminated by the mouth; the other half obovate and gland-shaped, with twenty-four longitudinal parallel elevated, distant, rough striæ; the aperture concave, and surrounded by an excavated annular stria, and furnished within with numerous recurved spines.

SQUAMATA. With eight slightly branched tentacula; body rough above, beneath soft. O. Fabr., &c. *Aëinia squamata*, Nov. Act. Nat. Cur. *Aëidia squamata*, Pallas.

Native of the Norway and Greenland seas; the species varies in size, and adheres firmly to rocks.

PENICILLUS. With eight branched tentacula; body bony, and five-sided. Müll.

Lives in the mud in the deeps of the Northern seas; the body is immovable, ventricose, smooth, white, with a brown collar black at the edges, and a parallel granulated pale ring behind the tentacula, which are carinated and blackish-yellow.

FUSUS. With ten tentacula; body fusiform and downy. Müll.

Like the last, inhabits the mud in the deeps of the Northern seas. The body is cinereous, rough with minute scales, and beset with very short fibres; protruding a cup-shaped hollow body, furnished beneath with a neck, and dilated above into an orb, perforated in the middle, with a black foramen, tentacula denticulated at the sides.

INHÆRENS. Body brown, with longitudinal whitish stripes, and twelve red tentacula. H. *Inhærens*, Müll. *Fistularia reciprocans*, Forssk.

Native of the North and Red seas; the body long, narrow, pellucid, and covered with innumerable viscid papillæ, by means of which it sticks to whatever it touches; tentacula fleshy, lanceolate, and denticulated, or slightly branched each side.

LÆVIS. Elongated, with white tentacula; body with five rows of lines and dots. O. Fabr.

Inhabits the Greenland seas, residing among rocks, and frequently hiding itself in the clay, from whence each alternate tentacula is protruded, while the rest are contracted; the body is soft, smooth, whitish and pellucid; the length from one to six inches; tentacula whitish, soft, and eight-cleft at the tip.

MINUTA.

MINUTA. Oblong, with twelve tentacula; body with five rows of warts. O. Fabr.

Found in the same seas as the latter, in sandy bottoms, and moves very slowly by means of its extended papillæ. The body four lines in length, glabrous, sub-membranaceous, whitish, and rarely red; each row of papillæ consisting of ten; tentacula yellowish and six-cleft at the tip.

FORCIPATA. Ventricose, both ends narrow and conic; the anterior one forcipated. O. Fabr.

Length five inches; the body soft, lubricous, with a thin skin covered with innumerable slightly raised dots; forceps rigid, ochrey yellow, with curved fangs. Inhabits clayey bottoms in the Greenland seas, and is often devoured by the sea scorpion, *Cottus scorpio*.

ZONARIA. Oblong, depressed, with a flesh-coloured sheath, and a whitish hyaline pouch; body encircled with five yellow zones. Pallas.

Mouth transverse, with prominent gaping lips; inhabits the seas about Antigua.

VITTATA. Body soft, lax, with white bands dotted with brown; tentacula linear-lanceolate, and toothed at the sides. Forstk.

The body with five white stripes dotted with black, and alternate narrow brown ones dotted with white; tentacula twelve, brown in the middle, and at the sides paler. Inhabits the Red sea, among zoiteræ, and adheres to the hands by means of its viscid papillæ; length a span and a half.

MAXIMA. Body rigid and nearly square; above convex, beneath flat, and edged with white; tentacula filiform, and cut like petals at the tip. *Fistularia maxima*, Forstk.

The body about a foot in length, hard, and rough with papillæ; tentacula grey hyaline. Native of the Red sea.

IMPATIENS. Body rigid and cinereous; tentacula twenty, filiform, seven-cleft, and denticulated at the tip. *Fistularia impatiens*, Forstk.

Inhabits the shores of the Red sea under stones, or in the pores of *Spongia officinalis*. The body hardish, cinereous, varied with spots and bands, and rough with hemispherical warts, whitish in the middle, and contiguous; tentacula hyaline dotted with black, and obtusely toothed.

NUDA. Orbicular, blue, without crest; tentacula of the disk naked; of the rays beset with three rows of glands. Gmel. *Holothuria denudata*, Forstk.

About an inch in diameter; the body whitish in the disk above, and radiated with concentric striz, the margin and border blue; tentacula filiform and blueish hyaline. Closely allied to the medusa.

SPIRANS. Oval, blue, with oblique divided crest or veil, and numerous tentacula beneath. Gmel. Forstk.

Native of the Mediterranean; the body thin, convex, and terminating in a whitish central protuberance above, blue with brown border; crest two-parted and striated; tentacula filiform. Length two inches.

TENTACULATA. Oval; tentacula furrounding the mouth white. Forstk. &c. An ambiguous species.

HOLOWNE, in *Geography*, a town of Poland, in the palatinate of Chelm; 28 miles N.E. of Chelm.

HOLQUAHVILT, in *Botany*, a name by which some authors have called the tree which produces the Jesuit's bark.

HOLRAS, in *Geography*, a town of Norway, in the diocese of Christianland; 12 miles S.W. of Christianland.

HOLRU, a town of Abyssinia; 65 miles S. of Minè.

HOLSANOE', a small island in the N. sea, near the coast of Norway. N. lat. 60° 32'.

HOLSMUNSDEN, or **HOLTZMUNDEN,** a town of the

principality of Wolfenbittel, on the Wefer; 21 miles W. of Eimbeck.

HOLSOM. A ship is said to be holsom at sea, when she will hull, try, and ride well, without rolling or labouring.

HOLSTABROC, in *Geography*, a town of Denmark, in North Jutland, situated on a river, which runs into the North sea. The trade of the inhabitants chiefly consists in corn, oxen, and horses; 24 miles W. of Wiborg. N. lat. 56° 22'. E. long. 9° 38'.

HOLSTEIN, DUCHY OF, a country of Germany, in the circle of Lower Saxony. Including the lordship of Pinneberg, it is bounded on the N. by the duchy of Sleswic and the Baltic, on the E. by the Baltic, on the S. by the duchy of Lauenberg, the territories of Lubeck and Hamburg, and the Elbe; and on the W. by the Elbe and the German sea. It is about 70 miles long from E. to W., and 48 broad from N. to S. Subject to frequent storms and consequent inundations from its situation between the Baltic and the German sea, its inhabitants are put to great expence in raising dykes, particularly in the districts bordering on the German sea and the Elbe. These districts consist of excellent marsh land, which produce wheat, barley, oats, beans, peas, and rape-seed in great plenty. The meadows and pastures feed great numbers of cattle. The other parts of the country are still more fertile.

Holstein is divided into four provinces, *viz.* Holstein Proper, Stormar, Ditmarsen, and Wagria; the three first of which were formerly called "Nordalbingia," or "Saxony beyond the Elbe." The Saxons of this country were a free people, till Charlemagne subdued them, and removed 10,000 families into Brabant, Flanders, and Holland. By a treaty between this sovereign and the king of Denmark, the river Eider was fixed as a common boundary of the two countries. The country on the S. of the river was called the Marche, and a marggrave was appointed to defend it. Holstein Proper and Stormar were erected into a county by Lothario, duke of Saxony, in 1106, in favour of the count of Scauenburg; and his son Adolphus II. incorporated Wagria with Holstein, and peopled the territory with strangers from Holland and Westphalia. The territories were afterwards divided into separate principalities; and one of the princes who reigned here obtained from the king of Denmark the investiture of Sleswick. When this branch became extinct, and the people elected Christian I. king of Denmark, he became duke of Sleswick, and count of Holstein, which was soon afterwards erected into a duchy. His posterity reigned here as well as in Denmark. In 1720 the reigning prince of Holstein Gottorp, founded by the second son of Frederick I., was entirely dispossessed of his dominions. This prince had espoused Ann, the eldest daughter of Peter I. emperor of Russia. In 1743 his son, Charles Ulric was, by his mother's sister, Elizabeth, empress of Russia, declared grand duke of Russia. The king of Denmark, as duke of Holstein Gluckstadt, had formerly a seat and voice in the diet of the empire in the college of princes; and the emperor or empress of Russia possessed the same prerogatives for Holstein Gottorp. To the king of Denmark it belonged to appoint a governor over his part of Holstein, whose usual residence was Gluckstadt, whilst the regency court for Russian Holstein was held at Kiel. The principal trading towns are Altona, Gluckstadt, and Kiel. The exports of Holstein are wheat, barley, malt, starch, buck-wheat, peas, beans, rape-seed, horned cattle, sheep, rams, swine, horses, poultry, butter, cheese, venison, and fish. Lord Moleworth observes, that Holstein very much resembles

resembles England; and another traveller has remarked, that the inhabitants are in their persons very like the English. Hence it has been inferred, that the English nation came first from this lower circle of Saxony; and in confirmation of this conjecture, it is alleged, that there is an ancient town near it, called Landen, and an island called Angles; which gave occasion to call our Britannia, Anglia. This remark is confirmed by the most diligent inquirers into this subject, who place the country of our Saxon ancestors in the Cimbric Chersonese, in the tracts of land since known by the names of Jutland, Angelen, and Holstein.

HOLSTON, a river of America, being a branch of the Tennessee, which rises in Virginia, and joins the Tennessee, 22 miles below Knoxville. At that town it is 300 yards wide, and in a course of about 200 miles in length it receives several considerable rivers and smaller streams. It is navigable for boats of 25 tons upwards of 100 miles, to the mouth of the N. Fork, where iron-works have been erected upon a large scale.—Also, a settlement on this river, in the state of Tennessee, containing, in 1790, 28,649 inhabitants. The land is generally fertile, and being situated between two mountains, it seldom suffers for want of rain. It abounds with iron ore. A capital furnace and forge have lately been erected in Holston, near the Virginia line, a bloomery below the mouth of Watawga, and another 25 miles above the mouth of the French Broad. There are several lead mines in the settlement, and one particularly on the French Broad, that produces 75 per cent. pure lead. Merse.

HOLSTENIUS, or **HOLSTEIN, LUKE**, in *Biography*, was born at Hamburg in 1596. Having received a liberal education in his own country he went to Paris, where he acquired a high reputation for learning, but was converted from the principles of Lutheranism, in which he had been brought up, to those of Popery. He went from Paris to Rome, where he obtained the patronage of cardinal Francis Barberini, and through his means received distinguished marks of favour from the popes Urban VIII., Innocent X., and Alexander VII. By the first he was made canon of St. Peter's; by the second librarian of the Vatican; and by Alexander VII. he was sent to Inspruck, where he received from queen Christina of Sweden her formal profession of the Christian faith. He died at Rome in the year 1661, leaving behind him a high character for deep learning, a sound and penetrating judgment, and a fine critical taste. He was editor of a number of very learned works which he illustrated with notes and dissertations; and he left behind him much valuable matter, which was given to the public after his death, by his friends, in their editions of authors, or in different collections. Among his other pieces was "The Life of Pythagoras, by Porphyry," in Greek and Latin, with a curious dissertation on the life and writings of Porphyry, and observations on the life of Pythagoras. Moreri.

HOLSTER, a case for a horseman's pistol.

HOLSWORTHY, in *Geography*. See **HOLDSWORTHY**.

HOLT, when it occurs at the beginning or end of a word, signifies that it is, or hath been woody, from the Saxon *holt*, a wood, or sometimes possibly from the Saxon *hol*, hollow. Johnson.

HOLT, Sir JOHN, an eminent lawyer and judge, son of sir John Holt, serjeant at law, was born at Thame, in Oxfordshire, in 1642. He received the first principles of learning at Abingdon, of which town his father was at that time recorder: he afterwards went to Oriel college, Oxford, and from thence was entered a student at Gray's Inn. He soon became distinguished as a barrister, and in the reign of James II. he was made recorder of London, soon after which

he was called to the degree of a serjeant of the law. By refusing to give assistance to the arbitrary measures of the king, he was removed from the recordership of the city, but he retired with the approbation of an honest mind, and the regrets of the people, of whose cause he was always the advocate in spite of the authority and influence of the court. His principles were too well known for him to be forgotten in times of emergency, and he was chosen member of the convention parliament in 1688, and he was appointed one of the managers for the commons at the conferences held concerning the vacancy of the throne. In 1689 he was raised to the dignity of lord chief justice of the king's bench, and admitted to the honour of privy counsellor. He refused the post of chancellor offered him at the death of lord Somers, and continued as chief justice till his death in 1709. He is memorable among the English judges for a thorough knowledge of the law, joined to an invincible firmness and resolution in supporting its authority. He held in contempt the assumed powers of a house of commons, when those powers were evidently hostile to the common law of the land. He was the intrepid assertor of the rights and liberties of the subject, and was remarkably jealous of the interference of the military power in the execution of the laws: of which he gave a very signal proof when applied to sanction, by the presence of one of his people, the proceedings of the military sent to quell a riot excited by the infamous practice of crimping. The chief justice asked the officer what he intended to do if the populace refused to disperse, he replied, "we have orders to fire upon them:" "Have you so?" said the judge, "then observe, if one man is killed, I will take care that you and every foldier of your party shall be hanged. Sir, acquaint those who sent you, that no officer of mine shall attend foldiers, and let them know, likewise, that the laws of this land are not to be executed by the sword. These things belong to the civil power, and you have nothing to do with them." Such patriotic and virtuous conduct as this chief justice ever manifested, has not frequently been found in persons filling that high office. Few instances, indeed, have been found, in which judges have not acted the upright and honourable part in all causes of individuals brought before them; they have no motive to act otherwise: but the inflexible integrity of a judge is brought to the test when great political questions are to be decided: when one of the people, who is but as dust in the balance, is about to be borne down by a whole branch of the legislature, in such a case lord chief justice Holt was tried, and his decision has insured for him an unfading immortality. *British Biog.*

HOLT, in *Geography*, a market town and parish in the hundred to which it gives name, in the county of Norfolk, England, is pleasantly situated on an eminence, 121 miles distant from London. Great part of the town was destroyed by fire in the year 1708, since which time many good houses have been erected. The enumeration under the late act of parliament was 215 houses, and 1004 inhabitants. The quarter-sessions of the peace are holden here, by adjournment from the city of Norwich. The sessions-house, which is a handsome building, is occasionally used for holding subscription assemblies. A considerable free-school was founded here, in the year 1556, by sir Thomas Gresham, who was a native of this town, and whose memory is perpetuated by the building of the royal exchange, London. The school is well endowed for 30 scholars, and has annexed to it a scholarship and fellowship in Sydney college, Cambridge. The patronage and government of the school are, by the appointment of the founder, vested for ever in the company of fishmongers of London. Two fairs are annually held here; and

and a weekly market on Saturday. Blomefield's History and Antiquities of Norfolk.

HOLT, a township and chapelry in the parish of Greford, and hundred of Bromfield, Denbighshire, Wales, is seated on the banks of the river Dee, and was formerly a market town. At this place the river separates England from Wales, the county of Chester being on one side, and that of Denbigh on the other. These are united by a bridge of 10 arches, which is said to have been built in the year 1345. On the banks of the river formerly stood a strong castle, which is now nearly levelled to the ground. It was garrisoned for Charles I. in 1643, but, with other fortresses in this part of the country, was taken by the parliamentary forces. The inhabitants of Holt, Denbigh, and Ruthin, jointly send one member to parliament. In 1801 this township contained 161 houses and 804 inhabitants. Pennant's Tour in Wales, vol. i. 4to.

HOLT, a town of Norway, in the diocese of Christianfand; 32 miles N.N.E. of Christianfand.—Also, a town of Germany, in the duchy of Cleves; 27 miles S.E. of Cleves. N. lat. 51° 39'. E. long. 6° 26'.

HOLT, a village of England, in the county of Wilts, seven miles E. of Bath; it has a medicinal spring.

HOLT, in *Rural Economy*, the name of a morbid affection of the feet of different domestic animals. The hoof and feet in this case should be carefully examined, and the cause ascertained.

HOLT-waters. These have been found by experience to be of admirable efficacy in all scorbutic and scrophulous cases. An account of some very remarkable cures performed by them in these cases, was printed several years ago; and though known to be fact in the place, was disbelieved by almost every body beside.

Mr. Lewis, formerly minister of the place, confirms their efficacy from his own observation; and observes that they are of an attenuating, astringent, and drying nature. The first of these properties they possess in common with all waters which dilute, attenuate, and fit the juices for passing the proper vessels; their astringency they owe to the alum and iron which they contain; and their drying, absorbing, and healing qualities are probably owing to a quantity of sulphur, and a fine light ochre, which they are impregnated with. Phil. Trans. N° 408.

HOLT's Creek, in *Geography*, a river of America, in the state of Kentucky, which runs into the river Kentucky, N. lat. 38° 37'. W. long. 84° 18'.

HOLTALLEN, a town of Norway, in the diocese of Drontheim; 54 miles S. of Drontheim.

HOLTEN, a town of Norway, in the government of Aggerhuus, remarkable for its church, which is cut out of a rock; it is very ancient, and supposed, by Olaus Wormius, to have been an heathen temple; 15 miles N.W. of Tongfberg.

HOLTZBAUER, in *Biography*, in 1772 maestro di cappella to the elector palatine at Mannheim, when his electoral highness had the best instrumental band in Europe, and operas composed expressly for his theatre by the greatest masters of the time. Holtzbauer, who had been in Italy, was not only an excellent composer of symphonies on the model of the elder Stanitz, but the opera singing-master. The Danzi, afterwards Madame Le Brun, and the Alleganti, were his scholars.

HOLTZBOGN, an excellent performer on the violin in the service of the elector of Bavaria, in 1772. He was a scholar of Tartini, had a great hand, a clear tone, and more fire than was usual in performers of the Tartini school, which was rather remarkable for delicacy, expression, and high-

finishing, than for spirit and variety. Holtzbogn wrote well for his instrument, and we heard him play a very masterly concerto of his own composition.

HOLTZHAUSEN, in *Geography*, a town of Germany, in the bishopric of Munster; 8 miles N.W. of Munster.

HOLTZKIRCHEN, a town of Bavaria; 18 miles S.S.E. of Munich.

HOLUAN, HOLWAN, or *Hulwan*, a town of the Arabian Irak; 110 miles N.N.E. of Bagdad. N. lat. 34° 50'. E. long. 44° 54'.

HOLUAN, a town of Egypt, on the right bank of the Nile; 12 miles S. of Cairo.

HOLUM, or HOALUM, or *Hola*, a town of Iceland, at the mouth of a small river, the see of a bishop, founded about the year 1106, and since improved by Christiern III. Here are a school, cathedral, and printing office. N. lat. 65° 43'. W. long. 15°.

HOLWELL, JOHN ZEPHANIAH, in *Biography*, was born about the year 1709. He went out in early life as a writer in the service of the English East India company, and by his assiduity he gradually rose in office till the year 1756, when he was appointed second in council at Fort William. At this period, an offence having been given to the nabob of Bengal, induced him to lay siege to that fort with a powerful army. The governor fled, and the command devolved on Mr. Holwell, who, with a few men, was resolved to defend the place to the last extremity. He was, however, obliged to surrender, but on the promise of security to their persons, in violation of which he and his men were shut up in a small room, since denominated the *black-hole* of Calcutta, which see. Of the survivors who escaped this infernal charnel-house, Mr. Holwell was one, who became the historian of the sufferings which were endured on that occasion; and when Calcutta was brought under the British dominion he raised a monument on the spot, at his own expence, to the memory of the unhappy victims, and to record the infamy of him who could perpetrate so black a deed. On his return to England Mr. Holwell wrote various tracts upon the concerns of the India company, and he entered deeply into the history and mythology of the natives of Hindoostan, concerning which he gave the public some curious information in a work entitled "Interesting historical Events relative to the Provinces of Bengal and the Empire of Indostan." In this he gives a very particular account of the Gentoo Shastah, which he represents as the oldest religious institute extant, and the genuine source of the mythology and cosmogony of the Egyptians, Greeks, and Romans. He published another work, in 1788, connected with this subject, entitled "Dissertations on the Origin, Nature, and Pursuits of Intelligent Beings," &c. The idea that men are fallen angels, condemned to suffer in human bodies for the sins of their former state, is the leading principle of this production. Mr. Holwell was author of several other pieces, one on inoculation for the small-pox in the East Indies, with the mode of treating the disease in that part of the world, and one entitled "A new Experiment for the Prevention of Crimes," which chiefly consists in proposed premiums for the practice of virtue. He died in 1798, much respected by all who knew him. His works display a benevolent heart, and a liberal way of thinking. There is still living, at a very advanced age, in the neighbourhood of London, Captain Mills, one of the fellow sufferers with Mr. Holwell in the *black-hole* of Calcutta.

HOLY, haliz, Saxon, or *hyleigh*, Dutch, from *hal*, *healby*, or in a state of salvation. The term is variously applied; sometimes in the same sense with good, or religious, or sacred; and sometimes for hallowed, or appropriated to religious

religious or sacred purposes. Thus, it is used in the same sense with sanctified, *i. e.* separated from ordinary use, and appropriated to pious or religious purposes. In this sense it has been applied to persons, places, and things. See HOLYNESS.

HOLY, Cape, in *Geography*, a cape in the Frozen ocean. N. lat. $72^{\circ} 32'$. E. long. $179^{\circ} 40'$.

HOLY Fire. See FIRE.

HOLY of Holies, called also the "most holy place," and the "oracle," because God here gave his answers to the high priest, when consulted by him, an apartment of the Jewish temple, which was divided, in the first temple, from the "holy place" by a partition of boards overlaid with gold, in which there was a door-place with a veil over it. It was 20 cubits in length. Although the "holy place" was reckoned very sacred, yet it was not to be compared in this respect with the "most holy," which was regarded as the palace of God. For this reason none but the high priest was permitted to go into it, and that but once a year, *viz.* on the great day of expiation (Exod. xxx. 10. Lev. xvi. 2. 15. 24. Heb. ix. 7.), on which day, as the Jews tell us, it was lawful for him to go in several times. This part of the temple, as well as the whole building, was surrounded with rooms and apartments for different uses. The roof of the "holy of holies" was not flat, as in the other parts of the temple, and in eastern houses in general, but sloping, as in our buildings; and, according to Josephus (*De Bell. Jud.* l. vi. c. 6.) it was covered and armed all over with pointed spikes of gold, to keep off the birds from nesting upon it. Although the roof was inaccessible to all, yet there was round it a kind of rail or balustrade, according to the law (*Deut.* xxii. 8.) to keep any one from falling down that should happen to go there. The "holy of holies" was at the west end of the temple, and the entrance into it toward the east, contrary to the practice of the heathens. The greatest ornament of the "holy of holies" was wanting in the second temple, *viz.* the **ARK of the Covenant**, or *Testimony*, which see.

HOLY Place, or *Sanctuary*, an apartment of the Jewish temple called by the Jews the "outer house" (it being such in respect of the "holy of holies"), was situated between the porch and the most holy place, being 20 cubits broad, and 40 in length and height. It had two gates, one of which was called the *leffer*, through which they passed in order to open the *great gate*, which had four folding doors. The sanctuary was divided from the holy of holies neither by a wall nor gate, but only by a double veil. This is supposed to have been the veil which was rent in twain at our Saviour's death (*Matt.* xxvii. 51.), because it was to be of no further use. It seems to be alluded to in *Rev.* xi. 19. xv. 5. See **SANCTUARY**.

HOLY Ghost, Order of the, is a military order in France; the principal in point of dignity in that kingdom.

It was instituted by king Henry III. in 1579, in memory of three great events happening on the same day, or *Whit-sunday*: *viz.* his birth, accession to the crown of France, and election to that of Poland; the order was to consist of a hundred knights only, who, to be admitted, were to make proof of their nobility for three descents.

The king was the grand-master, or sovereign, and took the oath as such on his coronation day; whereby he solemnly vowed to maintain for ever the order of the Holy Ghost; and not to suffer it to shrink, fall, or diminish, so long as it should be in his power to hinder it; nor even to attempt to alter or dispense with any of the irrevocable statutes of the order.

The knights were all to wear a gold cross, hung

about the neck by a blue silk ribband, or collar, hanging scarfwise from the left shoulder; and the officers and commanders are also to wear the same cross, embroidered in silver, sewed on the left side of their cloaks, robes, and other upper garments.

Before they received the order of the Holy Ghost, that of St. Michael was conferred, as a necessary degree, for which reason their arms were surrounded with a double collar.

The collar of the order, at its first institution, was composed of fleurs-de-lis or, cantoned with flames of the same, enamelled gules, intermixed with three cyphers, or monograms, of gold, composed of the letters H and L, enamelled white; which letters were the initials of the institutor's name, and that of his wife Louisa of Lorraine. Henry IV. altered the cypher into a trophy of arms. Afterwards the collar was composed of fleurs-de-lis, cantoned with flames and trophies of arms; and at the bottom hung a gold cross of eight points, enamelled on the edges white, with a fleur-de-lis or, at each angle, and in the middle a dove. In an oval, on the back of the cross, was represented St. Michael trampling on the dragon, all proper.

HOLY Ghost, Order of. See DOVE.

HOLY Ghost, Cross of the, in *Heraldry*, consists of a circle in the middle of a cross, and on it the Holy Ghost, in figure of a dove: the four arms are drawn narrow from the centre, and widening to the ends, where the returning lines divide each of them into two sharp points; upon each of which is a pearl.

From the intervals of the circle between the arms issue four fleurs-de-lis. This was the cross worn by the knights of the order of the Holy Ghost in France.

HOLY Rood, in *Geography*, a bay in Newfoundland island, at the head of Conception bay.

HOLY Rose, or *Rock-Rose*, in *Botany*. See **CISTUS**.

HOLY Sepulchre of Jerusalem, Knights of the order of the, an order which, according to some, was instituted by Godfrey of Boulogne, on the seventeenth day of July, in the year 1099; and, according to others, by his brother Baldwin, second king of Jerusalem, in the year 1103. The badge of this order was a cross potent gold, cantoned with four crosses of the same, without any enamel, pendent at the breast to a black ribband; and a like cross embroidered on the left side of the white cloak or mantle, which the knights were constantly to wear.

HOLY Thistle, in *Botany*. See **CENTAUREA Benedicā**.

HOLY Thursday, is what we otherwise call *Ascension day*.

HOLY Week is the last week of Lent, called also *Passion Week*.

HOLY Year is sometimes used for the year of *jubilee* (which see); and sometimes for the ecclesiastical year of the Jews. See **YEAR**.

HOLYCROSS, in *Geography*, a village in the county of Tipperary, province of Munster, Ireland, remarkable for the ruins of an abbey which belonged to the Cistercian order of monks. The lands belonging to this abbey were an earldom, and the abbot, according to Archdall, was styled *earl of Holycross*: he was certainly a baron of parliament, and was usually vicar-general of the Cistercian order in Ireland. A particular account of the buildings may be found in Archdall's "Monasticon Hibernicum;" but it will suffice to observe here, that they appear to have been very unequal, some being built of marble and highly finished, whilst other parts are miserably mean. These ruins cover a considerable space, near the banks of the river Suire. A parish church and a few wretched cabins are the only remains

of a once celebrated place. It is seven miles from Cashel, on the road to Thurles and Nenagh.

HOLYHEAD, a sea-port, market-town, and parish in the island of Anglesea, North Wales, stands on a peninsula at the western end of the isle. In the British language it is called *Caer-Gybi*, or the fort or castle of Gybi. Having been for many years a station for vessels that sail between Ireland and England, it has thereby become a place of trade and public resort. The distance from Holyhead to Ireland is twenty leagues; and for the conveyance of letters, passengers, &c. between those places, one packet sails hence every day in the week excepting on Thursdays. It generally reaches the opposite coast in twelve hours; but in stormy or calm weather, the time of the passage is very uncertain: sometimes the vessel has remained at sea for two or three days, but when the wind is favourable, the voyage may be performed in six, seven, or eight hours. The church-yard at this place is a vast mass of rock, close to the sea, and is environed by a wall. Pennant described this to be seventeen feet high, and six thick on three sides of the inclosure, and on the other side it has only a parapet wall, the natural boundary being a precipitous rock. "At each corner of the wall is an oval tower. The masonry of the whole is evidently Roman: the mortar very hard, and mixed with much coarse pebble. Along the walls are two rows of round holes, about four inches in diameter, which penetrate them. The use of this harbour to the Romans, in the passage from various places to the ports of Lancashire and that of Chester, is very evident. They could not find a better place to run into, in case of hard weather, than this, as it projected farthest into the Vergivian sea; so that they could reach it with less danger of being embayed than in any other place." (Pennant's Tour in Wales, vol. ii.) In the vicinity of the town, this author visited and has left us accounts of other antiquities. On the summit of the hill called *Pen-Caer-Gybi*, are some remains of an ancient circular building, which Mr. Pennant conjectures was a Roman *Pharos*, or watch-tower. Remnants of a long wall, built without mortar, were found on the side of the hill; and some ruins of an edifice, called *Capel y Gorles*, were remaining between the town and the mountain. In the town was a religious house, said to have been erected in the latter part of the sixth century. A college was also founded here soon after the year 1137, by *Hwfa ap Cynddelw*, lord of *Llys-Llifon*. The present parish church belonged to the college; but the oldest parts of the architecture do not appear to be anterior to the reign of king Edward III. A public school was established here in 1745. A large inn and hotel, an assembly room, and some baths have been erected at Holyhead, within the present century, and various improvements have been lately made to the town and harbour. The former consists of one principal street, with several detached buildings, and according to the population report of 1801 then contained 503 houses, and 2132 inhabitants. Here is a weekly market on Saturdays. The harbour is formed by cliffs beneath the church-yard, and a small island called *Ynys-Gybi*, on which is a light-house. Pennant's Tour, Beauties of England and Wales, vol. xvii.

HOLYNESS, or **HOLINESS**, sanctity; the quality which constitutes or denominates a person or thing *holy*; *i. e.* pure or exempt from sin.

HOLYNESS is also used in respect of persons and things that are sacred; *i. e.* set apart to the service of God, and the uses of religion.

In this sense we say, holy days, holy ordinances, the holy Bible, holy Gospels, holy war, &c. The Roman Catholics

call the inquisition the holy tribunal; the see of Rome, the holy see, &c.

Holy oil, holy water, &c. See **UNCTION**, **WATER**, &c.

Palestine is particularly called the holy land; and Jerusalem the holy city. Princes formerly made a practice of going to signalize their religion in the Holy Land; who would have manifested the more genuine spirit of religion by staying at home. See **CROISADE**.

In Romish countries, one-third part of the year is taken up in holy days, saints days, &c. See **FEASTS**.

Urban VIII. issued out an edict in the year 1643 for diminishing the number of holy days.

In Scotland they observe no stated holy days, besides Sundays.

By a decree issued at Paris, April 9, 1802, the feasts to be celebrated in France, besides Sundays, are, the nativity of our Saviour Jesus Christ, Ascension day, the Assumption of the most blessed Virgin, and the feast of All-saints.

HOLYNESS is also a title of quality, attributed to the pope, as that of majesty is to kings.

Anciently the same title, *holyness*, was given to all bishops; as appears in St. Augustine, Fortunatus, Nicholas I., Cassiodore, &c. St. Gregory compliments some of his contemporary bishops with your beatitude and your holyness.

The Greek emperors of Constantinople were also addressed under the title of *holyness*, on account of their being anointed with holy oil at their coronation. Du Cange adds, that some of the kings of England have had the same attribute; and that the Orientals have frequently refused it to the pope.

HOLY-ROOD DAY, a festival observed by the Roman Catholics, in memory of the exaltation of our Saviour's cross. See **CROSS** and **EXALTATION**.

HOLY-WATER SPRINKLE, among *Hunters*, signifies the tail of a fox.

HOLYWELL, in *Geography*, a market town and parish in Flintshire, North Wales, derives its name from a copious spring, or well, which was much frequented in former times by religious devotees, who fancied that its waters were supernaturally efficacious in curing certain disorders and purifying the body. In the present day, the same stream is rendered more useful to mankind, by being applied to mechanical and manufacturing purposes. It is so highly important and singular, and its history so illustrative of ancient monastic superstition and craft, that it will be interesting to narrate a few particulars. The legendary origin of the well states, that Wenifred, or St. Wenifrede, was a beautiful and devout virgin, who lived in the early part of the seventh century. She was placed under the protection of a relation, who had founded a church here. A young prince, named Cradock, attempted to seduce her, but she fled towards the church for safety. In her road to this place of sanctuary, she was overtaken by the prince, who, enraged by disappointment, struck off her head. "This, like an elastic ball, bounded down the hill, through the door of the church, and up one of the aisles, directly to the altar, where her friends were assembled at prayers; resting here, a clear and copious fountain immediately gushed out. St. Beuno snatched up the head, and again joining it to the body, it was, to the surprise and admiration of all present, immediately reunited to the body." Such is the monkish origin of the well: and when such a miracle was industriously circulated, it would necessarily excite the astonishment and reverence of the credulous. Not satisfied with such fables, the present

age has assigned a natural and probable origin to the spring, by ascribing it to physical causes. At the foot of a steep hill, and from an aperture in a rock, rushes forth a torrent of water, which, from its quantity and regularity, is calculated to astonish the ignorant and interest the geologist. It has been ascertained that this spring discharges not less than eighty-four hogheads of water in a minute. This is never known to freeze, and the current rarely ever varies in quantity; and from its rapid course and quantity, it becomes of inestimable value; for though the water has only a mile and 124 yards to flow in its progress to the sea, it turned, a few years ago, the machinery to eleven different extensive mills. These appertained to so many manufactories, &c. for cotton and twist, corn, brass-battery copper, copper wire, brass-milting, &c. Connected with these were nearly forty vessels, from thirty to fifty tons burthen each, to convey the several manufactures and the materials to and from Liverpool and other sea-ports. Over the well is a beautiful polygonal building, supported by pillars and arches. The roof, says Mr. Pennant, is most exquisitely carved in stone. Sculptured ornaments of grotesque animals, armorial insignia, &c. are attached to different parts of the building. Some of the latter relate to the Stanley family, by one of whom it was probably erected, either in the reign of Henry VI., or Henry VII. An apartment over the well was a free chapel.

Of Holywell town, Mr. Bingley observes, that he knows of none in North Wales that, in a commercial view, is of more importance. The numerous manufactures in its vicinity, and its easy access to the sea, have rendered it the great mart of this part of the kingdom. The town is spacious, but irregular, pleasantly situated on the slope of a mountain, which extends nearly to the water. Many of the houses are good, and give to it an air of considerable opulence. At the base of the hill, near the well, is the parish-church, which was built in the year 1769, on the site of a more ancient edifice. "It has only one bell," says Mr. Pennant, "and that not to be heard at any distance; so that the congregation is assembled by a walking-steeple, a man with a small bell who sounds the notice through the streets." At a short distance north of the town, in a narrow, retired vale, are some remains of Basingwerk or Greenfield abbey. Of this building the walls, and some pillars of the refectory, are the chief remnants. The knights templars had an elegant chapel here. Vestiges of Basingwerk castle remain on an eminence near the monastic ruins; also, some mounds called Watt's dyke: this was a bold rampart of earth, which extended from Holywell to Oswestry in Shropshire, and runs nearly parallel with the more noted Offa's dyke. Pennant's History of Whiteford and Holywell, 4to. 1796, and Bingley's North Wales, two vols. 8vo. 1804.

HOLZAPFEL, a town of Germany, and capital of a county of the same name, situated on the borders of the Lahn, erected into a principality of the empire by Ferdinand III. This town lies at the foot of a mountain, on which is the tower of an ancient castle, the original feat of the princes of Nassau; 4 miles N.E. of Nassau. N. lat. 50° 20'. E. long. 7° 52'.

HOLZKIRCHEN, a town of Germany, in the county of Wertheim; 9 miles E. of Wertheim.

HOMA, a town of South America, in the government of Buenos-Ayres; 15 miles S. of Corrientes.

HOMA, in *Surgery*, an anasarous or dropical swelling.

HOMAGE, in its general sense, denotes the reverence, respect, and submission, which a person yields his master, lord, prince, or other superior.

The word is formed of the Latin *homo, man*; because when the tenant takes his oath, he says, *Ego devenio homo vester, I become your man*; for the same reason homage is called *manhood*; so the homage of his tenant and the manhood of his tenant are the same. Coke on Littl. fol. 64.

HOMAGE, *Homagium, Hominium*, in *Law*, is an engagement or promise of fidelity; which the vassal, or tenant who holds a fee, renders to the lord, when admitted thereto.

In the original grants of lands and tenements, by way of fee, the lord did not only oblige his tenants to certain services, but also took a submission, with promise and oath, to be true and loyal to him, as their lord and benefactor.

This submission, &c. is called homage; the form whereof, as appointed by stat. 17 Edward II. is in these words; When a free man shall do homage to his lord, of whom he holdeth in chief, he shall hold his hands together, between the hands of his lord, and shall say thus: "I become your man from this day forth, for my life, for member, and for worldly honour; and shall owe you my faith for the land I hold of you; saving the faith that I owe unto our sovereign lord the king, and to mine other lords."

In this manner the lord of the fee, for which homage is due, takes homage of every tenant, as he comes to the land or fee. Glanvil, indeed, excepts some women; who only perform homage by their husbands; because homage is supposed to have a more immediate relation to service in war: but Fitzherbert denies this exception. Nat. Brev. fol. 157.

It is added, that bishops do no homage, but only fealty; and probably for the same reason as women. Yet do we read, that the archbishop of Canterbury does homage on his knees to our kings, at their coronation; and that the bishop of Man was homager to the earl of Derby.

Fulbeck reconciles this: by our law, says he, a religious man may do homage, but may not say to the lord, *Ego devenio homo vester*; because he has already professed himself to be only God's man; but he may say to him "I do unto you homage, and to you shall be faithful and loyal."

Homage and fealty, or faith, are two distinct things, and different duties. See **FEALTY**.

Originally homage was performed by the gentlemen, and fealty by the peasant. Others say, that homage was that performed to the lord himself, and fealty to his seneschal, or steward, for his lord. It is added, that he who holds lands for term of life, owes homage, but not fealty.

Bishops take the oath of fealty and loyalty to the king; for the temporalities they hold of him, or which are restored to them; and at the same time do homage to their sovereign.

HOMAGE Fee. See **FEE**.

HOMAGE-licge, a more extensive kind of homage, whereby the vassal held of the lord, not only for his land, but his person; so that the lord might use him against all mankind, whether within or without the kingdom; excepting against the king. See **LIEGE**.

This kind of homage was rendered bare-headed, with the hands joined on the Gospels, and one knee on the ground, and without sword, girdle, or spurs. By which it was distinguished from frank homage. See **ALLEGIANCE**.

There are also other distinctions of homage; as,

HOMAGE, Plain, or homage of a fee; where no oath of fidelity is taken.

HOMAGE of Devotion, which is a donation made to the church; and does not import any duty, or service at all.

HOMAGE of Peace, which a person makes to another after a reconciliation, as an assurance that he will no longer disturb his peace, &c.

HOMAGE, Simple. See ALLEGIANCE.

HOMAGE, again, is divided into *new*, or that performed upon the grant of the fee; and *ancestral*.

HOMAGE, Ancestral, is where a man and his ancestors, time out of mind, have held their land of the lord, and his ancestors, by homage.

If such lord have received homage, he is bound to acquit the tenant against all other lords above him, of every manner of service; and if the tenant has done homage to his lord, and is impleaded, and vouches the lord to warranty, the lord is bound to warrant him; and if the tenant lose, he shall recover in value against the lord so much of the lands as he had at the time of the voucher, or any time after.

HOMAGE is also used for a jury, in a court-baron, because commonly consisting of such as pay homage to the lord of the fee. See JURY, COURT-BARON, and MANOR.

HOMAGE is also taken, in some cases, for the particular place, or district, where the services are to be performed.

HOMAGER, a person that does, or is bound to do, homage to another.

HOMAGIO RESPECTUANDO, a writ issued out to the escheator commanding him to deliver seisin of lands to the heir that is of full age, notwithstanding his homage not being done.

HOMAGIUM REDDERE has been used to signify, to renounce homage: as where the tenant or vassal, made a solemn declaration of disavowing his lord, for which there was a form prescribed by the feudatory laws.

HOMALIUM, in *Botany*, is a genus so named by Jacquin, as he informs us, from *ὁμαλνῆ*, equality, because of the equal disposition of the stamens. Jacq. Amer. 170. Schreb. 366. Willd. Sp. Pl. v. 2. 1225. Mart. Mill. Dict. v. 2. Swartz. Ind. Occ. v. 2. 988. Prodr. 86. Juss. 343. Lamarck Illustr. t. 483. (Racoubea; Aubl. Guian. v. 1. 589. t. 236.) Clais and order, *Polyandria Trigynia*. Nat. Ord. *Rosaceae*, or perhaps *Rhamnifera*, Juss.

Gen. Ch. *Cal.* Perianth of one leaf, divided into six or seven ovate-lanceolate, acute, widely-spreading segments. *Cor.* Petals six or seven, ovate, flat, a little longer than the calyx, spreading; nectary consisting of six or seven flat glands, which are alternate with the petals. *Stam.* Filaments varying from 18 to 28, awl-shaped, erect, the length of the corolla, three or four of them being inserted into the receptacle, between the glands, within the base of each petal; anthers roundish, small. *Pist.* Germen roundish, hairy, immersed in the base of the calyx; styles three or more, erect; stigmas simple. *Peric.* Capsule woody, ovate, of one cell. *Seeds* numerous, small.

Ess. Ch. Calyx six or seven-cleft. Corolla of six or seven petals. Stamens three in a bunch. Capsule of one cell, with many seeds.

Obs. All the parts of the flower are permanent. This genus is supposed to be akin to *Blackwellia* of Commerçon and Jussieu, (which is different from *Blackwellia* of Gærtner, t. 117), but the insertion of the stamens is thought to distinguish them; see Willd. Sp. Pl. v. 2. 930. Lamarck. Illustr. t. 412. Juss. 343. We feel a strong inclination to unite the two genera, but in deference to such authorities shall now only speak of undoubted species of *Homalium*.

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1. *H. racemosum*. Willd. n. 1. Jacq. Amer. 170. t. 183. f. 72. Swartz. Ind. Occ. v. 2. 989. Lamarck Illustr. t. 483. f. 2.—Leaves elliptical, with shallow serratures. Partial flower-stalks longer than the calyx. Petals ovate.—Native of banks of rivers in Martinique and Jamaica, flowering late in the autumn.—A lofty tree, with a tufted head, in habit like an elm. *Flowers* in bunches. *Stamens* 18 or 21, so that three are placed together within each petal. *Germen* surrounded by the calyx. *Seeds* brownish.

2. *H. Racoubea*. Willd. n. 2. Swartz. Ind. Occ. v. 2. 991. Lamarck Illustr. t. 483. f. 1. (Racoubea guianensis; Aubl. Guian. 590. t. 236.)—"Leaves elliptical, with broad serratures. Partial flower-stalks shorter than the calyx. Petals ovate.—A native of the woods of Guiana, flowering and bearing fruit in May.—*Stem* about four feet high, bearing tortuous branches six or eight feet long. *Leaves* alternate, smooth, ovate, obtusely pointed. *Flowers* yellow. This species is very nearly allied to the last, but differs in having its leaves almost toothed and leathery, flowers larger, and fruit woody.

3. *H. angustifolium*. Sm. MSS. Leaves elliptic-lanceolate, slightly wavy. Partial flower-stalks very short. Petals obovate.—Native of Sierra Leone, communicated by Sir Joseph Banks in 1792.—The leaves are much smaller than in the last, narrower, and nearly entire. *Chusters* axillary, simple, scarcely so long as the leaves. *Flowers* nearly sessile, smaller than either of the preceding, and essentially distinguished by the obovate shape of their petals.

HOMALOCENCHRUS. See LEERSIA.

HOMAN, or **OMAN**, in *Geography*, a town of Fez, in the province of Habat, between Alcaçar-quiber, and Arzilla.

HOMBERG, WILLIAM, in *Biography*, a celebrated physician and chemist, was born at Batavia, in the island of Java, in 1652. His father was a Saxon gentleman, who had entered into the service of the Dutch East India company, and ultimately obtained the command of the arsenal of Batavia. He quitted that settlement however, and went to Amsterdam, where his son advanced rapidly in the course of his education, and became devoted to study. He went to Jena, Leipzig, and Magdeburg, where he pursued the study of the law, and was admitted to the bar in the last-mentioned place, in 1674. But without neglecting his profession, he began to take great interest in the study of natural history; and becoming acquainted with Otto Guericke, who had invented the air-pump, and was pursuing experimental philosophy with celebrity, he attached himself to this able man in order to be instructed in those sciences. His increasing desire for knowledge induced him to quit Magdeburg, and he set off to Italy, where he applied to the study of medicine, and particularly of anatomy and botany at Padua. When at Bologna, he discovered, by his experiments, the method of making the Bologna stone luminous, which had been almost lost. At Rome he formed an intimate acquaintance with Marc Anthony Cælio, a Roman nobleman, an able mathematician, astronomer, and mechanic, who was exceedingly dextrous in making large lenses. Homberg applied ardently to these studies, as well as to painting, sculpture, and music, in which he made great progress. Leaving Italy, he travelled through France, and visited England, where he laboured for some time with the celebrated Mr. Boyle. He then returned to Holland, and after improving himself in anatomy under De Graaf, rejoined his family, then residing at Quidlinburg. He had now decided on adopting the profession of medicine, and took the degree

of M.D. at Wittenberg; but he was still more inclined to the pursuit of his favourite sciences, than to settle in the practice of his profession. Accordingly, he travelled to the north, in order to visit Baldwin and Kunkel, the inventors of two sorts of phosphorus, which, at that time, made a considerable noise; and he obtained their methods of preparing it, in exchange for some other chemical secrets. He proceeded thence to the mines of Saxony, Hungary, Bohemia, and Sweden, in order to pursue his inquiries respecting the metals; and at Stockholm he laboured, together with M. Hierna, first physician to the king, in the laboratory recently established there by his majesty. He was still urged by the love of liberty and science to pursue his travels, notwithstanding the wishes of his family that he should settle in his own country, and he repeated his journey to Holland and France, where he was received by the scientific men with great favour. At the urgent request of his father, who was now impatient at his delay, he had fixed the day of his departure from Paris, when M. Colbert, in the name of the king, made him such advantageous offers, as induced him to remain in that metropolis. In 1682 he embraced the Catholic religion; but the next year he lost his patron Colbert, and was disinherited by his father for having changed his religion. In 1685 he was induced to pay a second visit to Rome, where he remained some years, practising medicine with great success. On his return, his extensive information, his phosphorus, his microscopes, an air-pump which he had invented, more perfect than those of Guericke and Boyle, and various operations and discoveries, soon acquired for him a distinguished rank among the most eminent philosophers. In 1691 he was admitted a member of the Academy of Sciences, and through the favour of the abbé Bignon, director, he obtained the uninterrupted use of the laboratory of the academy. In 1702 the duke of Orleans ordered a magnificent laboratory, fitted up in the completest manner, to be put under the direction of Homberg, to whom he also assigned a pension; and in 1704 the duke appointed him his first physician. Homberg married in 1708 the daughter of M. Dodart, an eminent physician, with whom he lived but a few years, being carried off by a dysentery, to returns of which he had been for some time liable, in September 1715, at the age of sixty-three. Homberg, although of a weak constitution, was exceedingly laborious. His acquirements were very extensive; for besides a thorough knowledge of every department of natural philosophy and chemistry, he was well acquainted with history and languages. His mind was capable of a degree of attention, which enabled him to make observations, that might have escaped others; and his method of explaining them was simple, accurate, and concise. He never published any large work, but he furnished a great number of curious and interesting memoirs to the Academy of Sciences, which were printed in their collections. Gen. Biog. Eloy. Dict. Hist.

HOMBERG, or *Homburg*, in *Geography*, a town of Germany, in the duchy of Berg; 24 miles E.S.E. of Cologne.—Also, a town of the principality of Hesse Cassel, situated on the Efze. It contains an iron-forge and a glass manufacture; 20 miles S. of Cassel. N. lat. 51° 2'. E. long. 9° 20'.

HOMBURG *vor der Höhe*, or *Homburg in the mountains*, a town of Germany, which gives title to a branch of the house of Hesse, called Hesse-Homburg; seven miles N. of Frankfort on the Maine. N. lat. 50° 15'. E. long. 8° 32'.

HOMBERG *an der Ohm*, a town of Upper Hesse, on the

Ohm, with a castle on an eminence; 11 miles S.E. of Marburg. N. lat. 50° 43'. E. long. 9° 1'.

HOMBERG, or *Homrig*, a town of Wurzburg; 14 miles W. of Wertheim.

HOMBURG, or *Hombourg*, a town of France, in the department of Mont Tonnerre, and chief place of a canton, in the district of Deux-Ponts; five miles N.N.W. of Deux-Ponts. N. lat. 49° 11'. E. long. 7° 21'. The place contains 1761, and the canton 4581 inhabitants, in 14 communes.

HOMBURG, or *Hockenbourg*, a town of the duchy of Wurzburg, situated on the Maine; 15 miles W.S.W. of Wurzburg.

HOME, HENRY, Lord KAMES, in *Biography*, eminent as a judge and writer, was born in the county of Berwick in 1696. He was educated at home till he was of a proper age to be sent to the university of Edinburgh, to study the law as his future profession. The acuteness of his genius, and the success with which he applied himself to professional studies, were displayed by a number of publications on the civil and Scotch law. The first of these, published in 1728, consisted of "Remarkable Decisions of the Court of Sessions," which he afterwards published, much enlarged, in the form of a dictionary in two volumes folio. Without enumerating all his works on legal subjects, we may mention, as the most curious of his productions in this class, "Historical Law Tracts," containing fourteen separate treatises upon interesting subjects connected with the judicial and constitutional history of the country. He gave a multitude of proofs of indefatigable industry, and profound knowledge, which raised him to the first rank in his profession, and in 1752 he was advanced to the bench of judges of the court of session, on which promotion he took, according to the custom of Scotland, the title of lord Kames, and his authority as a law writer is still quoted at the Scotch bar, with the same respect as is paid to the luminaries of law in the English courts. We are now to consider lord Kames in the character of a literary man; from his earliest days he had a decided turn for metaphysical discussions, and maintained a correspondence on these subjects with bishops Berkeley and Butler, Dr. Clarke, and other great men who have become illustrious, by their talents, in the annals of their country. In 1752 he published "Essays on the Principles of Morality and Natural Religion." In this work he endeavoured to establish several general principles of action. He also openly avowed the doctrine of philosophical necessity, which had become obnoxious by being adopted by some writers who rejected revealed religion; and though he closely allied it with the duties of morality and real religion, he underwent many attacks on its account. In 1761 he published for young persons his "Introduction to the Art of Thinking," which consists of maxims and general observations on human nature and the conduct of life illustrated by examples. His great work, the "Elements of Criticism," was given to the world in the year 1762, which is a truly original performance, and which discarding all arbitrary rules of literary composition derived from authority, establishes a new theory upon the principles of human nature. In 1773 he appeared again before the public in his "Sketches of the History of Man," in two volumes 4to. This work comprises many subjects of the greatest importance relative to human society. They are not all treated with equal accuracy, and some of the examples are taken from suspected sources. He published, in 1777, "The Gentleman Farmer, being an attempt to improve Agriculture by subjecting it to the Test of rational Principles." This work was the result of much

much observation and practical knowledge of the business of farming, which he acquired by the pursuit on a large scale, on his own estate, in Perthshire. In 1781 he published another work, entitled "Loose Hints upon Education, chiefly concerning the Culture of the Heart," and in the following year he died at the age of eighty-six. Lord Kames was as much distinguished by his vivacity in conversation, as the extent of his legal knowledge and literary labours. To a very advanced age he was the life and soul of all the parties with which he mixed: no topic could be started above or below his powers of discussion. Lord Kames was in the habit of rising very early, and he was a man of great regularity and order in the disposition of the several parts of his time: he seemed to know the value of each minute as it passed, and it was thus he rose to the high eminence which he possessed, in opposition to all the obstacles which the tumult of public business could throw in his way. In the friendships which he formed he was ardent, zealous, and sincere. He attained to constant habits of devotion, and a perpetual sense of the Deity, and a veneration for an over-ruling Providence ever dwelt upon his mind. From this source arose that propensity, which appears in all his writings, of investigating final causes, and tracing the wisdom of the Supreme Author of nature. A few days before his death he went to the court of session, addressed all the judges separately, told them he was speedily to depart, and took a solemn and affectionate farewell.

HOME, in *Sea Language*, denotes either the situation of some object, where it retains its full force of action; or where it is properly lodged for convenience or security. In the former sense it is applied to the sails, and signifies, that their clues or lower corners are close to the blocks upon the yard-arm, immediately beneath them: hence to haul home the top-sail-sheets, is to extend the bottom of the top-sail to the lower-yard, by means of the sheets. In the latter sense, it usually refers to the stowage of the hold; as a cask, &c. is said to be *home*, when it bears against and lies close to some other objects: or to the anchor, which is said to come home, when it loosens from the ground, by the effort of the cable, and approaches the place where the ship floated, at the length of her moorings.

HOME Breeds, in *Rural Economy*, a term signifying such breeds of cattle or other sorts of live-stock, as are bred and reared in the particular district or county.

HOME-District, *the*, in *Geography*, a district of Nassau, in the province of Quebec, Upper Canada, so constituted by a proclamation of lord Dorchester, in July 1788, and deriving its present name from an act of the provincial legislature. It is bounded E. by a meridian passing through the mouth of the river Trent; N. by the Ottawa river, into lake Tomiganning and the bounds of the Hudson's bay company, and also by part of lake Huron; W. by a meridian passing through the eastern extremity of Long point, or the N. Foreland; and S. by part of lake Ontario, and part of lake Erie.

HOME, *Harvest*. See HARVEST.

HOME-stall, in *Rural Economy*, a term frequently applied to the site or situation of the farm-house, and other buildings including the farm-yard. It cannot be disputed that farms are of greater or less value in proportion to the conveniencies which they possess, and the facility of the means of occupying them. It is well known that arable farms require an extent of buildings and other conveniencies adequate to the sizes and particular kinds of them. Tenants are not unfrequently seen much checked and confined in their operations and improvements, as well as subjected to great waste of produce, in consequence of the want of a sufficient

extent of farm offices. But on the contrary, it is occasionally to be noticed, that there is a prodigality of this sort of buildings, which incurs vast unnecessary expence, not only at first, but afterwards in the repairs that become requisite. The extent of buildings should consequently be well proportioned to that of the farm, and rarely extended much beyond it. All extremes must be most carefully avoided. See FARM, and FARM-YARD.

HOME-stead, the name of the situation or space of ground on which the farm-house, buildings, and offices are raised. The situations intended for this purpose should be chosen with much care and circumspection, regard being constantly had to convenience, water, and various other points of importance. See FARM-YARD, and HOME-stall.

HOMER, in *Biography*, justly celebrated as the prince of poets, flourished, according to Blair, about 900 years before the Christian era, though Priestley and others place this event half a century later. Seven cities disputed the glory of having given him birth, *viz.* Smyrna, Rhodes, Colophon, Salamis, Chios, Argos, and Athens, but the probability is, that he was born either on the continent of Lesser Asia, or upon one of the islands near it. We have nothing certain respecting the life of this poet: critics have usually thrown aside as spurious and fabulous the life of Homer, said to have been written by Herodotus. The detail of circumstances contained in that piece is so circumstantial and minute, that it can deserve no credit whatever. There seems no doubt that, notwithstanding the high reputation and vast celebrity which he has enjoyed for nearly three thousand years, he spent his life in poverty, wandering about from city to city, and from the court of one prince to that of another, obtaining temporary patronage from the recital of his poems. If he were blind he probably became so in his old age. The origin and composition of the poems attributed to Homer, are involved in as much obscurity, as the facts relating to his birth-place and life. In his celebrated poems entitled the Iliad and Odyssey, the poet has displayed the most consummate knowledge of human nature, and rendered himself immortal by the sublimity, the fire, the sweetness, and elegance of his poetry. In his Iliad, Homer has described the resentment of Achilles, and its fatal consequences in the Grecian army before the walls of Troy. In the Odyssey, the poet has for his subject the return of Ulysses into his country, with the many misfortunes which attended his voyage after the fall of that city. These poems are each divided into 24 books, the same number as there are letters in the Greek alphabet, and, though the Iliad claims an uncontested superiority over the Odyssey, yet the same force, the same sublimity and elegance prevail, though divested of its more powerful fire: and the great author of the "Sublime," compares the Iliad to the mid-day, and the Odyssey to the setting-sun, and adds that the latter still preserves its original splendour and majesty, though deprived of its meridian heat. "Whether these were epic poems in the sense now attached to the word, primarily formed upon a determinate plan, and constituting a whole;—whether they were a fortuitous assemblage of detached parts, connected by some later hand; by means of an assumed subject, or, lastly, whether these rhapsodies were the work of one author or of several, are questions which have exercised, and which still continue to exercise, the ingenuity of critics. There is no doubt that the constituent parts of these poems long wandered separately through the principal cities of Greece, and the whole of them are said by Plutarch to have been brought from Asia to Greece by Lycurgus, and their first arrangement, in the order we now have them, is ascribed to Pisistratus. But whatever doubts these circumstances might throw upon the original plan of their

their composition, it is contended that all the parts so manifestly conspire to that general purpose which is proposed in the exordium, that they must have flowed from uniform design. The difficulty of conceiving how such long works could be accurately transmitted by memory through ages, previously to the use of writing, increases the intricacy of the question; but in answer to this it has been observed, that the poetry of Homer was so universally admired, that, in ancient times, every man of learning could repeat with facility any passage in the Iliad and Odyssey. These poems, it appears, from the very earliest times, were consulted as authorities for local claims, and controversies were decided respecting boundaries and prerogatives, by lines from the catalogue of Homer's ships. Modern travellers have been astonished to behold the different scenes which the poems of Homer described 3000 years before, still existing in the same unvaried form, and the navigator, who steers his course along the Ægean sea, finds all the promontories and rocks which appeared to Nestor and Menelaus, when they returned victorious from the Trojan war. By the ancients Homer was venerated and worshipped as a god. The inhabitants of Chios celebrated festivals in his honour every fifth year: and the people of Cos considered it as their greatest glory that the poet of Greece was buried in their island. Alexander was so much attached to the works of Homer, that he usually placed them under his pillow, with his sword, and he deposited the Iliad in one of the richest and most valuable caskets of Darius, observing, that the most perfect work of human genius ought to be preserved in a box the most valuable and precious in the world. The best editions of the Iliad and Odyssey are that by Dr. Barnes with the Greek scholia, in two volumes 4to. : that by Dr. Clarke published in 4to. 1729, and that by the learned Heyne. The most elaborate commentary is that by Eustathius, bishop of Thessalonica, and the best English translation is that by Pope: though Cowper's, in blank verse, is thought to come nearer to the original.

HOMER, in *Geography*, a military township of America, in Onondago county, New York, on the head-waters of the N. W. branch of Chenengo river; containing 612 inhabitants.

HOMER, *Omer*, or *Chomer*, a Jewish measure, containing the tenth part of the epha. See CORUS and MEASURE.

HOMESOKEN, or rather HAMSOKEN; sometimes also written *Hansfoka*, and *Hansfokna*, the privilege or protection which every man enjoys in his own house.

"Hansfokne, hoc est quietus esse de amercementis pro ingressu hospitii violenter et sine licentia contra pacem regis, et quod teneatis placita de hujusmodi transgressione in curia vestra." W. Thorn, 2030.

Hence, he who invades that freedom, is properly said, *frangere homfocnam*.

This crime seems to amount to what we now call burglary; which is a crime of a heinous nature, as being not only a breach of the king's peace, but a breach of that liberty which a man hath in his own house, which, as we commonly say, should be his castle, and therefore ought not to be invaded. Bracton. lib. iii.

HOMFELDS, in *Geography*, a town of Germany, in the county of Lippe; 9 miles E. of Lemgow.

HOMICIDE, of *homo*, a man, and *caedo*, I kill, in *Common Law*, the killing of a man.

Homicide is divided into three kinds: *viz.* *justifiable*, *excusable*, and *felonious*. The first has no guilt at all; the second very little; but the third is the highest crime against the law of nature, which man is capable of committing.

Justifiable homicide is such as is owing to some unavoidable

necessity, without any intention or negligence in the person that kills, and, therefore, without any shadow of blame. Of this kind is the act of a magistrate or officer, who puts a malefactor to death, in obedience to the law, and in the execution of public justice. Homicide is also *justifiable* for the advancement of public justice; as, where an officer, in the execution of his office, either in a civil or criminal case, kills a person that assaults or resists him (1 Hal. P. C. 494. 1 Hawk. P. C. 71.); where an officer, or any private person, attempts to take a man charged with felony, but is resisted, and in the endeavour to take him, kills him (1 Hal. P. C. 494.); where officers, in case of a riot or rebellious assembly, endeavouring to disperse the mob, kill them; such officers are justified both by common law (1 Hal. P. C. 495. 1 Hawk. P. C. 161), and by the riot act, 1 Geo. I. cap. 5. Where prisoners are killed by the gaoler or officer, in endeavouring to prevent their escape (1 Hal. P. C. 496.); where trespassers in forests, parks, chases, or warrens, refuse to surrender to the keepers, they may be slain; (21 Edw. I. stat. 2. 3 & 4 W. & M. cap. 10.) But in all these cases there must be an apparent necessity; so that the party could not be arrested or apprehended, the riot could not be suppressed, the prisoners could not be kept in hold, the deer-stealers could not but escape, unless such homicide were committed, without which this kind of homicide is not justifiable. When one champion killed another in battle, such homicide was justifiable, and was imputed to the just judgment of God (1 Hawk. P. C. 71.) Moreover, such homicide, as is committed for preventing any forcible and atrocious crime, is justifiable by the law of nature, and by the law of England. (24 Hen. VIII. cap. 5.) Thus, if any person attempts a robbery or murder, or endeavours to break open a house in the *night-time*, or to burn it (1 Hal. P. C. 488.), and should be killed in the attempt, the slayer shall be acquitted and discharged. This is agreeable to the Jewish law, Exod. xxii. 2. to the laws of Athens, and the Roman law of the Twelve Tables. The English law also justifies homicide in defence of *chastity*; which see.

Excusable homicide is such as the law excuses from the guilt of felony, though it implies some degree of fault and blame. This is either *per infortunium*, *i. e.* by misadventure, or *se defendendo*, upon a principle of self-preservation in a sudden fray. See CHANCE-MEDLEY.

The first is, where a man doing a lawful act, without any intention of hurt, unfortunately kills another; as where a man has a hatchet at work, the head of which flies off, and kills a stander-by, or where a person, qualified to keep a gun, is shooting at a mark, and undesignedly kills a man (1 Hawk. P. C. 73, 74). Thus also, when a parent is moderately correcting his child, a master his apprentice or scholar, or an officer punishing a criminal, and happens to occasion his death, it is only misadventure; but if he exceeds the bounds of moderation, in the manner, the instrument, or degree of punishment, and death ensues, it is at least manslaughter, and in some cases, according to circumstances, murder.

These two species of *excusable* homicide are similar in their blame and punishment. Among the Jews, the slaughter even of enemies required a solemn purgation, which implies that the death of a man, however it happens, will leave some stain behind it. And the Mosaic law (Numb. c. 35. and Deut. c. 10.) appointed certain cities of refuge for him who killed his neighbour unawares, &c. But he was not held wholly blameless, any more than in the English law; since the avenger of blood might slay him before he reached his asylum, or if he afterwards stirred out of it till the death of the high-priest. In the imperial law likewise

casual homicide was excused, by the indulgence of the emperor, signed with his own sign manual, "adnotatione principis:" otherwise the death of a man, however committed, was in some degree punishable. Among the Greeks homicide by misfortune was expiated by voluntary banishment for a year. (Plato de leg. l. ix.) In Saxony a fine is paid to the kindred of the slain: which also, among the western Goths, was little inferior to that of voluntary homicide (Stiern. de jure-Goth. l. iii. c. 4.): and in France no person was ever absolved in cases of this nature, without a largess to the poor, and the charge of certain masses for the soul of the party killed. By our laws these two species of homicide formerly incurred a forfeiture, as some say, of all the goods and chattels; according to others, only of part of them, by way of fine or *weregild*, which was probably disposed of, as in France, in *pious usus*, or for the benefit of his soul. But the delinquent has now a pardon, and writ of restitution of his goods, as a matter of course and right, only paying for suing out the same (2 Hawk. P. C. 381.); and in most cases the judge will grant a general verdict of acquittal. Fost. 289.

Felonious homicide is the act of killing a human creature without justification or excuse. This is either self-murder (see *FELo de se*); or the killing of another man, which is divided into *manslaughter* and *murder*; which see respectively. Blackst. Com. book iv. cap. 14.

HOMILY, ὁμιλία, formed of ὁμιλος, *assembly*, originally signifies a conference, or conversation; but the word has since been applied to an exhortation, or sermon, delivered to the people.

The Greek *homilia*, says M. Fleury, signifies a familiar discourse, like the Latin *sermo*; and discourses delivered in the church took these denominations, to intimate, that they were not harangues, or matters of ostentation and flourish, like those of profane orators, but familiar and useful discourses, as of a master to his disciples, or a father to his children.

All the homilies of the Greek and Latin fathers are composed by bishops. We have none of Tertullian, Clemens Alexandrinus, and many other learned persons; because, in the first ages, none but bishops were admitted to preach.

The privilege was not ordinarily allowed to priests, till toward the fifth century. St. Chrysostom was the first presbyter that preached stately. Origen and St. Augustine also preached, but it was by a peculiar licence, or privilege.

Photius distinguishes homily from sermon; in that the homily was performed in a more familiar manner; the prelate interrogating and talking to the people, and they, in their turn, answering and interrogating him; so that it was properly a conversation; whereas the sermon was delivered with more form, and in the pulpit, after the manner of the orators.

There are several fine homilies of the fathers still extant; and, particularly, of St. Chrysostom, St. Gregory, &c. The practice of compiling homilies, which were to be committed to memory, and recited by ignorant or indolent priests, commenced towards the close of the eighth century; when Charlemagne ordered Paul Deacon and Alcuin to form homilies or discourses upon the Gospels and Epistles, from the ancient doctors of the church. This gave rise to that famous collection, entitled the Homiliarium of Charlemagne, and which being followed as a model by many productions of the same kind, composed by private persons, from a principle of pious zeal, contributed much (says Mosheim,) to nourish the indolence, and to perpetuate the

ignorance of a worthless clergy. Eccles. Hist. vol. ii. p. 254. 8vo. ed.

At the time of the Reformation there were several of these homilies composed and printed, and ordered to be read in such churches as were not provided with a sufficiently learned minister, in order to prevent unfound doctrine being taught in remote country places. The homilies of the established church of England are contained in two books; the former of which was published in the reign of Edward VI., and the latter in the beginning of the reign of queen Elizabeth. Both these are pronounced by the 35th article of the church to "contain a godly and wholesome doctrine, and necessary for these times," *i. e.* for the times in which they were published. The authors of these homilies were the great reformers Cranmer, Ridley, Latimer, and Jewel. Bishop Tomline mentions, in his "Refutation of Calvinism, 8vo. 1811, that not one of the peculiar doctrines of Calvin is mentioned in either of these two books: the word Predestination does not occur from the beginning to the end of the homilies; the word Election occurs upon one occasion only, and then it is used in its true scriptural signification, very different from that in which it is used by Calvinists: the word Reprobation does not occur at all: nothing is said of absolute decrees, partial redemption, perseverance, or irrefragable grace.

HOMILIES, CLEMENTINE. See CLEMENTINA.

HOMINE capto in withernam, in *Law*, a writ for apprehending him that has taken any bondman or woman, and led him or her out of the country; so that he or she cannot be replevied according to law. See WITHERNAM.

HOMINE eligendo ad custodiendam peciam sigilli pro mercatoribus editi, a writ directed to a corporation for the choice of a new person to keep one part of the seal appointed for statutes merchant, when a former is dead according to the statute of Acton Burnel.

HOMINE replegiando, a writ for the bailing of a man out of prison, when he is confined without commandment of the king or his judges, or for any cause that is repleviable. But this writ is now seldom used; a writ of habeas corpus being sued out on the necessary occasions.

HOMINICOLÆ, formed of the Latin *homo, hominis, man*, and *colo, I worship*, in *Antiquity*, a name which the Apollinarians gave to the orthodox, to denote them worshippers of man.

As the orthodox maintained that Jesus Christ was God-man, the Apollinarians accused them of adoring a man, and therefore called them *hominicole*.

HOMMACKS, in *Engineering*, are used by Mr. Smeaton to denote sand hills thrown up by the tide; sometimes also they are called paddocks.

HOMMEDAL, in *Geography*, a town of Norway, in the diocese of Christianland; 19 miles N.N.E. of Christianland.

HOMMOC, in *Sea Language*, signifies a hillock, or small eminence of land resembling the figure of a cone, and appearing on the sea-coast of any country.

HOMNONA, in *Geography*, a town of Hungary; 14 miles N.E. of Matusfalva.

HOMO, MAN, in *Zoology*. See MAN.

HOMOCENTRIC, composed of ὁμοιός, *similar*, and κέντρον, *centre*, in *Astronomy*, a term of the same import with concentric.

HOMOCHROA, in *Natural History*, the name of a genus of pebbles.

The word is derived from the Greek ὁμοιός, *similar*, and χροια, *colour*, and expresses such pebbles as are not veined, but all of one simple and similar colour. These are bodies composed

composed of crystalline matter, considerably debased by earth, and this of various kinds in the different species, but only of one kind in the same species, which is thence always of one colour, and not subject to veins. Of this genus there are only five known species; the white, red, yellow, blueish, and greenish. All these are covered with external coats or crusts, like those of the common pebble. Hill's Hist. of Foss. p. 510.

HOMODROMUS VECTIS, in *Mechanics*, a lever, in which the weight is in the middle between the power and fulcrum, or the power in the middle between the weight and fulcrum. See **LEVER**.

The word homodromus is derived from ἴσος, *same*, and δρόμος, *course*, because in this species of lever the weight and power move in the same direction; as in the heterodromus they move in contrary directions.

HOMOEOTELEUTON, Ὁμοιοτελευτον, a figure in *Rhetoric*, whereby several verbs in a sentence are made to end alike; as, eos deduci, evehi quam deferi malui: or, ut vivis invidiose, delinquis studiose, loqueris odiose.

HOMOGENEOUS, or **HOMOGENEAL**, composed of the Greek ἴσος, *like*, and γένος, *kind*, is a term applied to various subjects, to denote that they consist of similar parts, or of parts of the same nature and kind; in contradistinction to heterogeneous, where the parts are of different natures, &c.

Natural bodies are generally composed of homogeneous parts, as a diamond, a metal, &c. Artificial bodies, on the contrary, are assemblages of heterogeneous parts, or parts of different qualities; as a building of stone, wood, &c.

HOMOGENEAL LIGHT, is that whose rays are all of one and the same colour, degree of refrangibility, and reflexivity. See **LIGHT**.

HOMOGENEAL Numbers and Plants, are those of the same kind and nature.

HOMOGENEAL Surds, are such as have one common radical sign; as $\sqrt[3]{27}$, and $\sqrt[3]{3}$. See **SURD**.

HOMOGENEUM COMPARATIONIS, in *Algebra*, the known quantity in an equation; called also *absolute number*.

It is called *homogeneum comparationis*, of *comparison*, to distinguish it from the other terms; which, though homogeneous as well as this, *i. e.* always raised to the same degree of power, are not the quantities of which things are here compared or referred.

HOMOGRAMMI, Ὁμογραμμί, among the ancients, an appellation given to the athlete who drew the same letter, and on that account were to engage together; for when any number of athletes were to enter the lists, in order to determine with whom every one should contend, they threw into an urn a number of letters equal to that of the athletes, but so that there were always two letters of a sort, as two *a*'s, or two *b*'s. After these had been shaken together, the athletes drew them out, and those who got the same letter were to fight each other.

HOMOIOCATALECTON, Ὁμοιοκαταληκτον, in *Rhetoric*, a figure wherein the different parts of a sentence have the same termination.

Homoiocatalecton is used as a genus to denote similar terminations and words; and homoiopoton and homoioteleuton are made its species.

HOMOIOMERICAL PRINCIPLES, of ἴσος, *similar*, and μέρος, *part*, a peculiar kind of principle, supposed by Anaxagoras in all mixed bodies; being determinate numbers of such similar principles, as, when they came to be parts, *e. gr.* of an animal body, would there make such masses and combinations as their nature required; *viz.* the fan-

guinary particles would then meet together, and make blood, the urinous particles constitute urine, the osseous ones bones, the carneous flesh, &c. See **PRINCIPLE**.

HOMOIOPOTON, Ὁμοιοπώτων, a figure in *Rhetoric*, whereby the several parts of a sentence end with the same case, or tense of a like sound; *e. gr.* *mærentes, flentes, elachrymantes, & miserantes*. Isocrates is particularly celebrated for this figure. Some of the best orators have industriously avoided this figure, because it has too much the appearance of art.

HOMOLINON, a word used by some authors to express crude flax, and by others for a coarse sort of flaxen linen, made of the rough threads unwhitened, which was used by the ancients for towels to rub people after bathing.

HOMOLOGATION, in the *Civil Law*, the act of confirming or rendering a thing more valid and solemn, by publication, repetition, or recognition thereof.

The word comes from the Greek ὁμολογια, *consent, assent*, formed of ὁμος, *similar, like*, and λογος, of λεγειν, *dicere, to say*; *q. d.* *to say the same thing, to consent, agree*.

HOMOLOGOUS, in *Geometry*, is applied to the correspondent sides of similar figures, which are said to be homologous, or in proportion to each other.

The word is composed of ὁμος, *similar*, and λογος, *ratio, reason*; *q. d.* *quantities alike to each other in ratio*. So, if the ratio of A to B be the same as of C to D, here A is homologous to C, as B to D; because of the similitude between the antecedents and consequents. The two antecedents, and the two consequents, then, in any continued geometrical proportion, are homologous terms.

Thus, the base of one triangle is homologous to the base of another similar triangle: so in similar triangles, the sides opposite to equal angles are said to be homologous.

Equiangular, or similar triangles, have their homologous sides proportional.

All similar triangles, rectangles, and polygons, are to each other as the squares of their homologous sides.

HOMOLOGOUS Things, in *Logic*, are such as agree in name, but are of different natures. These coincide with what we otherwise call *equivocal* and *homonymous* terms.

HOMONOIA, in *Botany, from ὁμονομία, *concord*, alluding to the union of the stamens into various tribes, all co-operating to one end. Lour. Cochinch. 636. Clafs and order, *Diocia Polyadelphia*. Nat. Ord. *Tricocca*, Linn. *Euphorbia*. Juss.*

Gen. Ch. Male, *Cal.* Perianth of three ovate, concave, coloured leaves. *Cor.* none. *Stam.* Filaments about 200, equal to the calyx, united into 20 bundles; anthers roundish.

Female, on a separate plant, *Cal.* Perianth of one leaf, many-cleft, acute, permanent. *Cor.* none. *Pist.* Germen superior, roundish; style none; stigmas three, oblong, villos. *Peric.* Capsule three-lobed, with three cells, and three valves. *Seeds* roundish, solitary.

Ess. Ch. Male, Calyx of three coloured leaves. Corolla none. Stamens 200, in 10 bundles.

Female, Calyx inferior, many-cleft. Corolla none. Stigmas three. Capsule of three cells. Seeds solitary.

1. *H. riparia*. A native of the banks of rivers in Cochinchina, where it is called *Ri ri bô-foung*. It is a tree, six feet high, with a thick, upright stem, much branched. The leaves are linear, lanceolate, alternate, entire, downy. Flowers small, in nearly terminal linear spikes, called by Loureiro *amentia*, or catkins; but as he describes the male catkin with three scales to each flower, and a three-leaved perianth besides, it is manifest the former must be bractæas. The whole of his description besides indicates one of the natural order of *Euphorbia*, which are not amentaceous plants.

HOMONOPAGIA, a word used by some medicinal authors for the head-ach.

HOMONYMIA, in *Logic*, an equivocation. See **HOMONYMON**, &c.

HOMONYMON, ὁμωνυμον, composed of ὁμος, *similis*, and the Ionic ονομα, for ονομα, *name*, a word which has different meanings, or which is used to express things of different nature and quality.

Homonyma are the same with what are otherwise called *polysema*, *synonema*, and *equivocals*.

HOMOOUSANS, **HOMOUSIANS**, *Homousianists*, *Homousiasts*, formed of ὁμοουσιος, or ὁμοουσιος, signifying of the same substance, are names which the Arians anciently gave to the orthodox, because they held that God the Son is *homousios*, i. e. *con-substantial* with the Father. Hunneric, king of the Vandals, who was an Arian, published a rescript, directed to all the Homousian bishops. See **PERSON**, &c.

HOMOOUSIOS, ὁμοουσιος, among *Divines*, a being of the same substance or essence with another.

The divinity of Christ having been denied by the Ebionites and Cerinthians in the first century, by the Theodotians in the second, by the Artemonians at the beginning of the third, and by the Samosatensians, or Paulians, towards the close of the same, a council was assembled at Antioch in 269, wherein Paulus Samosatenus, head of this last sect, and bishop of Antioch, was condemned and deposed, and a decree published, as some have said, wherein Christ is asserted to be God of God, and ὁμοουσιος, i. e. *consubstantial* with the Father.

It has been urged by several ancient writers of the fourth century, viz. Athanasius, Hilary of Poitiers, and Basil, that the council of Antioch rejected the word ὁμοουσιος, or *consubstantial*, as improper: and if we consider that Eusebius, who has been called an Arian, speaks of Malchion, who directed and governed at this council, as a man of uncommon soundness in the faith of Christ, we may presume that the term was not introduced in this council. The council of Nice, however, assembled in 325, expressly established the Homousian doctrine. Many learned writers have taken pains to vindicate the orthodoxy of the council of Antioch, and to shew that both these councils held the same doctrine. See **ARIANS**.

HOMOPHAGI. See **OMOPHAGI**.

HOMOPHONI, in the *Ancient Greek Music*, implied unisons, contrasted with *Antiphoni*, which meant symphonies, or music in octaves. The word is derived from ὁμος, *alike*, and φωνη, *sound*.

HOMOPHONI, *Homophonous*, in *Greek Music*, was equivalent to *unisons*, or unisonous performance vocal or instrumental, in which the several parts were of the same pitch.

HOMORAN, or **HOMRAN**, in *Geography*, a town of Arabia, in the province of Yemen; between Sana and Beital-Fakih. In a hill in the vicinity of this town, there are said to be 360 reservoirs for water, cut in the rock. In its district is comprehended a large and fertile mountain, called Burra.

HOMORIUS, in *Mythology*, is an epithet given to Jupiter by the Greeks, answering to *Terminalis* among the Romans. Polyb. Hist. lib. ii.

HOMOROD, in *Geography*, a town of Transilvania; 15 miles N. of Fogaras.

HOMOTONOS, in *Medicine*, an epithet made the characteristic of a certain kind of fevers, which continue from the beginning to the end in one equable and uniform tenor, without exacerbation or relaxation.

HOMS, in *Geography*. See **EMESA**.

HOMUNCIONALES, in *Ecclesiastical History*, an ap-

pellation given by the Arians to the orthodox, who said there were two natures and substances in Christ.

HOMUNCIONISTS, **HOMUNCIONISTÆ**, formed of *homuncio*, a diminutive of *homo*, a man, q. d. *little man*, a sect of heretics, the followers of Photinus, and from him also called Photinians.

They had this appellation, because of their denying the two natures of Jesus Christ, and holding that he was only mere man.

HOMUNCIONITES, **HOMUNCIONITÆ**, were a sect of ancient heretics, whose distinguished dogma it was, that the image of God was impressed on the body, not on the soul or mind of man.

HO-NAN, in *Geography*, a most delightful province of China, situated near the centre of the country, and called by the Chinese Tong-hoa, or the Middle Flower. It is bounded on the N. by the provinces of Pe-tcheli and Chan-si, on the S. by Hou-quang, and on the E. by that of Chan-tong. Its capital is Cai-fong. The ancient emperors, invited by the mildness of the climate and the beauty of the country, fixed their residence here for some time. The abundance of its fruits, pastures, and corn, the effeminacy or rather voluptuousness of its inhabitants, and the cheapness of its provisions, have prevented trade from flourishing in this, as it has done in other provinces of the empire. The whole country is flat, except towards the west, where arises a long chain of mountains, covered with thick forests; and the land is in such high state of cultivation, that those who travel through it imagine they are walking in an immense garden. Besides the river Hoang-ho, which traverses this province, it is watered by a great number of springs and fountains; it has also a valuable lake, which invites to its banks a prodigious number of workmen, because its water has the property of communicating to silk a lustre, which cannot be imitated. Exclusively of forts, castles, and places of strength, this province contains eight *fan*, or cities of the first class, and 102 of the second and third. The population of this province, according to sir George Staunton, amounts to 27,000,000 persons.

HO-NAN, a city of the first class in the fore-mentioned province, situated amidst mountains and between three rivers. The Chinese formerly believed this city to be the centre of the earth, because it was the middle of their empire. Its jurisdiction is very extensive; for it comprehends one city of the second class, and 13 of the third. One of these cities named Teng-fong-hien, is famous on account of the tower erected by the celebrated Tcheou-kong for an observatory; in it is to be still seen an instrument which he made use of to find the shadow at noon, and to determine the latitude. This astronomer lived above 1000 years before the Christian era, and the Chinese pretend that he invented the mariner's compass. N. lat. 34° 44'. E. long. 112° 9'.

HONANELLA, a town of Hindooistan, in Sanore, on the Tungebadra; 15 miles E. of Sanore.

HONCKENYA, in *Botany*, named by professor Willdenow, in honour of his friend Gerard Augustus Honckeney, an able agriculturist. Willd. in Ust. Delect. v. 2. 200. Sp. Pl. v. 2. 325.—Class and order, *Oelandria Monogynia*. Nat. Ord. *Tiliacea*, Juss.

Gen. Ch. *Cal.* Perianth inferior, of five coriaceous, linear leaves, hairy and coloured externally, deciduous. *Cor.* Petals five, oblong, obtuse, rather shorter than the calyx, deciduous. Nectaries very numerous, capillary, dilated at the top, resembling flaments, shorter than the petals, inserted into the receptacle. *Stam.* Filaments eight, rather longer than the nectaries, inserted into the receptacle, compressed, linear, slightly dilated at their base; anthers erect.

creta, oblong, of two cells. *Pisf.* Germen superior, oblong, hispid; style thick, cylindrical, shorter than the stamens, erect; stigma with six teeth. *Peric.* Capsule oblong, clothed with very long thorns, of five cells and five valves, whose edges form the partitions. *Seeds* numerous, roundish, rather compressed, brown, rough with elevated points, half-clothed with a thin membranous tunic, and affixed to the central column.

Ess. Ch. Calyx of five leaves, inferior. Petals five. Nectaries numerous, resembling stamens. Capsule thorny, with five cells and five valves. Seeds numerous, each with a membranous tunic.

1. *H. feifolia.* Willd. in *Uft. Delect.* v. 2. 201. t. 4. Native of Guinea, where it was gathered by Mr. Isert. *Stem* woody; its branches round, clothed with short brown pubescence. *Leaves* alternate, on short stalks, toothed, or rather sharply serrated, two or three inches long; tawny and downy beneath: the upper ones oblong, obtuse, undivided; the lower palmate, with three or five blunt lobes. *Flowers* terminal, ternate, stalked, above an inch wide, of a blueish purple.—Nearly akin to *Aubletia* of Schreber and Willdenow, as the latter observes, but “distinguished by the form of its capsule, the stamen-like nectaries, and the tunicated seeds.”—The latter is indeed a good mark, but the supposed nectaries are probably only barren stamens.

HOND, in *Geography*, a town of Hungary, 10 miles N.W. of Tokay.

HONDA, a town of America, in New Granada, situated on the river Magdalena, in N. lat. $5^{\circ} 16'$, and long. E. of Quito $4 9'$. M. Bouguer represents it as a pleasant little town, and the chief mart of the commerce between Quito and the northern provinces.

HONDA, a bay on the N. coast of the island of Cuba; 70 miles W. of Havannah. N. lat. $22^{\circ} 58'$. W. long. $83^{\circ} 25'$.—Also, a bay on the E. coast of the province of Honduras, northward of Cape Gracias á Dios.—Also, a bay on the coast of South America, in the province of St. Martha. N. lat. 12° . W. long. $71^{\circ} 6'$.

HONDEKOETER, GILLES, in *Biography*, born at Utrecht in 1583, imitated the style of composition, and the manner of colouring, of Roland Savery, and David Vinckenbooms. He studied after nature these views which he intended for his landscapes, and in general made an agreeable choice. The forms and leafing of his trees are more in the taste of Vinckenbooms than Savery; but they are well handled, and firmly pencilled, though sometimes perhaps they are a little too brown, or too yellow.

He painted different kinds of fowls with singular truth and exactness, and frequently filled his small landscapes with no other objects; but those he finished highly, and with great transparence of colouring.

HONDEKOETER, GYSBRECHT, born at Utrecht in 1613, was son of the preceding, from whom he learned design and colouring. The subjects he painted were, cocks, hens, ducks, and other domestic fowls, which he described in a lively and strong manner, giving his objects agreeable attitudes, and colouring them exactly after nature. The works of this master are very often injudiciously ascribed to his son, although the paintings of Gysbrecht are in every respect abundantly inferior to those of Melchier Hondekoeter.

HONDEKOETER, MELCHIER, son of the preceding, was born at Utrecht in 1636, and from his infancy was carefully trained up to the profession by his father. He chose the same subjects; but, in his manner of painting them, he surpassed not only his master, but even the best of his contemporaries, in a very high degree. Till he was seventeen

years of age he practised under the direction of Gysbrecht and accustomed himself to paint several sorts of birds; but he was particularly pleased to represent cocks, hens, ducks, chickens, and peacocks, which he described in an elegant variety of actions and attitudes.

After the death of his father, which happened in 1653, he received some instructions from his uncle John Baptist Weeninx; but his principal and best instructor was nature, which he studied with intense application, and that enabled him to give to every animal he painted such truth, such a degree of force, expression, and life, as seemed to equal nature itself; nor did any artist take more pains to study every point that might conduce to the perfection of his art. His pencil was wonderfully neat and delicate; his touch light, his colouring exceedingly natural, lively, and remarkably transparent; and the feathers of his fowls were expressed with such a swelling softness, as might readily and agreeably deceive the eye of any spectator.

It is reported, that he had trained up a cock to stand in any attitude he wanted to describe, and that it was his custom to place that creature near his easel; so that, at the motion of his hand, the bird would fix itself in the proper posture, and would continue in that particular position, without the smallest perceptible alteration, for several hours at a time.

The landscapes which he introduces as the back grounds of his pictures, are adapted with peculiar judgment and skill, and admirably finished; they harmonize with his subject, and always increase the force and the beauty of his principal objects. His touch was very singular in imitating the natural plumage of the fowls he painted; which not only produced a charming effect, but also may prove serviceable to an intelligent observer, to assist him in determining which are the genuine pictures of this master, and which are impositions. The works of Hondekoeter are justly in very great request and estimation, and they generally afford a large price, almost in proportion to their value. He died 1695, aged 59.

HOND-HABEND. See HAND-HABEND.

HONDIUS, ABRAHAM, in *Biography*. This painter, who is well known in our kingdoms, was born at Rotterdam in 1638, according to the most authentic writers, though Descamps fixes his birth in 1650, twelve years later. He appears to have been an universal master, painting, with equal readiness, landscapes, animals of all kinds, particularly dogs, huntings of wild animals, boars, deer, wolves, and foxes, as also conversations and fowls; but his favourite subjects were huntings.

His manner seems peculiar to himself; it was bold and free; and, except Rubens and Snyders, few masters have painted animals in a greater style, or with more spirit. There is certainly a great deal of fire in his compositions; but his colouring is often extravagant, and his drawing extremely incorrect. In general his pencilling was harsh, and he delighted in a fiery tint; yet some of his small pictures are very neatly finished. There is a great inequality as to the merit of the works of Hondius, some of them being in every respect abundantly superior to others; but there is scarce any master whose compositions are so easily distinguishable as those of Hondius, by certain particularities in his touch, his taste of design, and his colouring.

Several of his pictures of dogs are much esteemed; and one especially is mentioned, in which he represented thirty different species of those animals, all being well designed, and every distinct animal being characterised with some peculiar air, action, expression, or attitude. As he was exceedingly harassed and tormented with the gout, the works of his latter

time are more negligently executed than those which he finished in his prime; and, therefore, they very much contribute to lessen the reputation he had acquired by some of his more studied and better finished performances.

His most capital picture is the burning of Troy, in which there are a variety of figures, many of them well designed and disposed with judgment. Houbraken also mentions a candle-light of this master's hand, in which appeared a fine opposition of light and shadow, and the figures were extremely well designed and well coloured. He died 1691, aged 53.

HONDO, in *Geography*, a kingdom of Africa, in the Sierra Leone country, bordering on Quoja, between the Grain Coast and the river Scherbro.

HONDTSCHOOTE, a town of France, in the department of the North, and chief place of a canton, in the district of Bergues; 10 miles S. E. of Dunkirk. The place contains 3168, and the canton 11,194 inhabitants, on a territory of 130 kilometres, in eight communes.

HONDURAS, a province of the domain or kingdom of Guatemala, in the Spanish dominions of North America, bounded on the N. by a bay of its own name, on the E. by the Mosquito shore and Caribbean sea, on the S. by Nicaragua, and on the W. by Guatemala and Vera Paz. The extent of this province is reckoned about 390 miles from E. to W., and 150 from N. to S. The country, which consists of mountains, vallies, and plains, is watered by many rivers, and the land is thus much enriched. It abounds with honey, wax, cotton, fine wool, and particularly dyeing woods, and has some gold and silver mines; the air is good except near low grounds and morasses; the soil is fertile, and in many parts produces Indian corn thrice in the year, together with wheat, peas, &c. Its pastures are excellent, and it furnishes all kinds of provisions. Its vineyards afford grapes twice in the year; for immediately after the vintage, the grapes are cut again; and the second grapes are ripe before Christmas. For want of cultivation, many parts of this rich country have become desert. Its chief towns are Valladolid the capital, Truxillo, Omoa, Gracias á Dios, and St. Jago. It derives its chief importance from those tracts on the bay which furnish logwood. (See *Bay of HONDURAS*.) The Mosquito Indians have entered into treaties with the English, who carry on the trade of mahogany and dyeing-woods.

HONDURAS, Bay of, a bay of the Caribbean sea, adjoining the province of the same, and situated between Cape Honduras and Cape Catoche, the north-easternmost point of Yucatan, in lat. $21^{\circ} 14'$. The country, adjacent to this bay, is chiefly inhabited by the Mosquito Indians, who were formerly more numerous, but their population has been diminished by the prevalence of the small-pox. A nation, still populous, has been fixed in the environs of Cape Gracias á Dios. This consists of the Sambocs, said to be the descendants of the crew of a Guinea-ship, which was formerly wrecked in these latitudes. Their complexion, their features, their hair, and their propensities, will scarcely allow us to trace them to any other origin. The first establishment of the English in these regions was formed about the year 1730, at the distance of 26 leagues from Cape Honduras. At the distance of 54 leagues from this colony is Gracias á Dios, the harbour of which, formed by an arm of the sea, is immense, and tolerably safe. It was near this famous cape that the English fixed themselves, upon a navigable river, the borders of which are very fertile. Seventy leagues beyond this, these people found at Bluefield some spacious and fruitful plains, an accessible river, a convenient harbour, and a rock which might be easily made impregnable. In

1769 the three factories did not employ more than 206 white men, as many mulattoes, and 900 slaves. Exclusively of the mules and other articles sent to Jamaica, they sent this year to Europe 800,000 feet of mahogany, 200,000 pounds weight of farfaparilla, and 10,000 pounds of tortoise-shell. This commerce had been very much carried on by smugglers; but in 1763 the liberty of selling logwood was secured to Great Britain; however, she was not permitted to raise forts, and was even obliged to destroy those which had been built. The abbé Raynal observes, that the wood which grows upon the dry soil at Campeachy, is much superior to that which is cut in the marshes of Honduras; though the last-mentioned wood was most in use, because the price of the former had for a long time past exceeded all bounds. Captain Henderson has lately (*viz.* in 1809,) published "An Account of the British Settlement of Honduras," the result of his own observations and inquiries. The climate, he says, is better than that of most of our West India islands; the air being refreshed with regular sea-breezes at all seasons, except during the early part of summer, *viz.* the months of April, May, and June. The average heat is 30° . The only settlement formed by the English, which deserves the appellation of a town, is called Balize, lying at the mouth of a river of the same name; which contains about 200 houses, all built of wood, and raised on pillars eight or ten feet from the ground. The stores and offices occupy the first floor, and the dining and sleeping rooms are placed on the second. Each house has, likewise, its upper and lower piazzas, which form the coolest retreats in the building. The river Balize is navigable above 200 miles up the country; and several of our settlers have proceeded to that distance in quest of wood. The bay of Honduras is sprinkled with a great number of shoals, rocks, and clusters of drowned islands, which render the navigation dangerous, and which, without skilful pilots, has occasioned many wrecks. The danger is increased during the prevalence of the northerly winds, when the weather is generally hazy, and the currents are subject to the influence of the winds. The vicinity of Honduras to several of the Spanish settlements renders it an appropriate station for the introduction of our manufactures, which has been hitherto subject to considerable impediments. The industry of our settlers has been so exclusively directed to the wood-trade, that agricultural cultivation has been neglected; though the soil is admirably rich, and fitted to produce either the sugar, coffee, and cotton of our West India islands, or the rice and maize of the continent. The fisheries might also be rendered very productive; that which is most regarded is the turtle-fishery. Some few of the turtle caught here find their way to London; but most of them, especially the species called "Hawk's bill," which yield the tortoise-shell, are consumed on the spot. The country still remains almost wholly covered with wood. The cutting of mahogany takes place twice in the course of the year; *viz.* at Christmas and in autumn. The labour is performed by negroes, each gang of whom has a "hunter," whose business it is to search the woods and discover the spot where the exertions of his fellow-labourers may be most profitably employed. In order to effect his purpose, he cuts his way through the woods, and climbs the tallest trees, in order to survey the surrounding country. The colour of the mahogany leaves aids his eye in tracing the most abundant spot. The mahogany tree is cut about twelve feet from the ground, the axe-man standing on a stage. The trunk of the tree furnishes, of course, the wood of largest dimensions; but for ornamental purposes the branches are preferable, the grain in them being closer, and the veins more variegated. As these trees are generally found separate and

disperfed, a mahogany-walk comprehends an extent of feveral miles. Their growth is rapid, but lefs fo than that of the logwood-tree, which is laid to attain maturity in five years. The trunks and branches are dragged to the river-side, put together in rafts, and floated to the coast. Most of the negroes employed here have been brought from Jamaica, or have accompanied their owners from the United States; no direct importation from Africa having taken place, they are subjected to much lefs labour than the slaves in our fugar colonies. The protection afforded by government to the Honduras trade, confifts in a convoy being appointed from Jamaica twice in the year, *viz.* in January and July. The annual revenue of the fettlement is about 5000*l.* fterling.

Of the aquatic species of birds around the bay of Honduras, the pelican and cormorant are the moft predominant, induced to refort thither for prey by the transparency of the fea on this coast. Swallows alfo appear in great numbers in the rainy feafon. They are obferved to quit in a body, as foon as the dawn appears, the Savannah, in which they have refted during the night, and to afcend into the air in a compact fpiral form, like a water-spout or column of fmoke. Having attained a certain height they difperfe in queft of food, which forms the occupation of the day. At fun-fet their defcent takes place in the fame manner, with inconceivable rapidity, and with a noife which can be compared only to the ruftling of a blaft or the fall of a torrent. On the Mofquito coast the flies are fo troublefome that the natives are obliged to quit their dwellings in certain feafons, and to pafs their nights in little barks upon the water. Thefe people feem to have arrived at that ftage of favage fociety which belongs to the clafs of "small defpotifms." All the affairs of domeftic life are performed by women; the fucceffion to the crown is hereditary; and the royal power is completely defpotic, abforbing within itfelf the executive, the legislative, and the judicial functions. They manifef no trace of religion except the adoration of evil fpirits; and they have among them neither phyfician nor lawyer, but abound in conjurors. Polygamy is freely allowed; but adultery is punifhed, though not capitally. They can fupport long abftinence from food, but they indulge in the customary exceffes of favages when they get poffeffion of provifions, continuing their repaft day and night, except in the fhort-intervals of fleep, until they have confumed their whole ftock. The warriors of the Mofquito tribe may amount to the number of 1500; and fmall as this force is, they are able to keep their inland neighbours, whofe manners are much ruder, in a ftate of dependence. The Mofquitos have an hereditary averfion to the Spaniards, and profefs great attachment to our countrymen.

HONDURAS, Cape, called alfo *Punta de Cafilla*, a cape of North America, at the eaftern fide of the bay of Honduras. N. lat. 16'. W. long. 86° 16'.

HONDURAS, Sea of, is that part of the North fea bounded N. by the ifland of Cuba, S. by the Mofquito fhore, S.W. by the bay of Honduras, W. by the peninfula of Yucatan, N.W. by the gulf of Mexico, E.N.E. by Jamaica, and the Caribbean fea.

HONDUROS, a town of the ifland of Cuba, 63 miles N.E. of Bayamo. N. lat. 21° 21'. W. long. 76° 4'.

HONE, NATHANIEL, in *Biography*, a portrait painter, who praftifed in London, with confiderable reputation, in oil and miniature, and more particularly in enamel. He was one of thofe artifts who were created members of the Royal Academy at its foundation. He died in 1784.

HONE, Cape, in *Geography*, a cape on the coast of Algiers, called by the natives "Ras Hunneine," and by the ancients

"Promontorium Magnum," fited; according to Dr. Shaw, in N. lat. 35° 24'. W. long. 1° 0'.

HONE Key, a fmall ifland in the Spanifh main, at the entrance of Bluefield's bay. N. lat. 11° 30'. W. long. 83° 1'.

HONE, a fine fort of whet-ftone, ufed for fetting razors, pen-knives, &c. (See *Whet-ftone*.) This is the *cos novacula* of Linnæus, with fmall gritty particles. See *Cos Novacula* and *OIL-ftone*.

It is of a yellowifh colour, and is vulgarly, but erroneoufly, fupposed to be holly-wood petrified or changed into ftone, by lying in a petrifying water for a certain feafon.

Of thefe waters there are laid to be fome in Oxfordfhire, that will thus petrify in a very fhort time.

A fort of hones is dug near Drogheda in Ireland: fome have defcribed thefe as petrified wood, from the vicinity of Lough Neagh.

At Woodthorp, Codnor upper park, and other iron-ftone mines in Derbyfhire, thin beds of iron-ftone are found in the binds belonging to the coal-meafures, which make pretty good hones when cut and ground to a face. See *Farey's Derbyfhire Report*, vol. i.

HONES, bed of, or **HONE-platement**, is one of the tools ufed in the operation of grinding fpecula for telefcopes. This is formed of pieces of the fineft blue hone or whet-ftone, which are nearly of the fame breadth and thicknefs, and which, when whetted, appear moft even and uniform in their colour and grain. Thefe pieces are to be cut into fquare bits, and having ground one fide of each concave on the convex marble, to which they are to be applied, with emery or fine fand, they are to be cemented upon this thick round piece of marble in a kind of pavement, leaving a fpace of a fmall ftraw's breadth between each, and placing their grain in an alternate direftion. Mr. Mudge, inftead of marble, ufes metal made of lead and tin, on which the hones are to be fo difpofed that the lines between them may run ftraight from one fide to the other; and by this difpofition, the teeth of a fine faw, moved along each of the divifions, will clear away the cement which rifes between the ftones. This bed of hones fhould be at leaft a fourth part larger than the metal which is to be ground upon it. The furface of the metal, upon which it is to be cemented, may or may not, at the pleafure of the workman, be turned of a convexity fuitable to the gage. As foon as the hones are cemented down, and the joints cleared by the faw, the tool muft be fixed in the lathe, and turned as exactly true to the gage as poffible. By this inftrument the fpherical figure of the fpeculum is completed, and its furface rendered fit for the polifher. See *Plate VI. Optics*, fig. 2. *Smith's Optics*, book iii. chap. ii. art. 791. *Phil. Tranf.* vol. lxxvii. part i. p. 307. See *GRINDING*.

HONE-wort, in *Botany*. See *SISON*.

HONESTY. See *LUNARIA*.

HONEY, MEL, is a fweet vegetable juice, collected by the bee from the flowers of different plants, and deposited in the cells of the combs. See *BEE*.

It has been long known, that the bees collect their honey as well as their wax from the flowers of plants; but former writers had no diftinct knowledge of the feveral parts of the flowers which furnifhed thefe induftrious infefts with two fuch different fubftances. It is now known that the honey is procured from thofe parts of the flowers which were firft difcovered by Linnæus, and to which he has given the name of *nectaria*: thefe are certain veficles or glands fited near the bafis of every petal, and continually fecreting a nectareous or melleous juice. It is not yet afcertained from what part of the flower or plant the bees collect the wax; fome have fupposed that it is furnifhed by the farina contained in the apices

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of the flowers; but N. Polhill, esq. an ingenious friend of the editor, of whose extensive and accurate acquaintance with the economy of the bees he has availed himself in articles pertaining to this subject, assures him that this is not the case; and that it is still undiscovered from whence they procure the wax. See WAX.

The bee seizes upon this part of the flower, and sucks from it their honey, or a juice of that nature, which will become honey under her management. She receives this into her body, and carries it home to the hive, where she unloads herself by emptying it into the cells which were before prepared to receive it. The bee does not receive the honey in collecting it from the flowers into the body, by means of her trunk, as many have supposed; for this trunk serves only to collect the sweet juice, in small drops, from the nectaria of flowers. When the trunk is thus loaded with the juice or honey, it deposits it on the tongue, which is exerted for that purpose, and being drawn back into the mouth, conveys it into the œsophagus. The œsophagus of the bee is a long and slender canal, passing from the mouth into the thorax; towards its termination in that part it is distended into a sort of bag, which forms the first stomach of the bee. Maraldi supposed the receptacle of the honey to be a bag, closed at the lower end, and only destined to receive the honey, and disgorge it again upon occasion; but Swammerdam, on a more accurate dissection of this insect, found it to be a real stomach, opening into another or second ventricle. The first stomach, when empty, is no more than a white filament, which, being hollow, is capable of receiving the honey; and, when received, it becomes swelled and distended in proportion to the quantity it contains, and is very narrow at its lower part, where it is joined to the second stomach. This is a sort of white transparent bladder, and is usually much distended, and so covered with large and broad circular muscles, that it seems to resemble a tub with many hoops. This stomach becomes again very slender and narrow at its lower end, where it is joined to the intestines. The second stomach and the intestines of the bee are often found to contain a great quantity of the farina; but the first stomach contains only honey, and is seen, by dissection, to be furnished with all the organs of contraction and distension which are necessary for throwing out its contents. When the honey has undergone a kind of concoction in the stomach, and is become much thicker than in its undigested state (though the gentleman already referred to apprehends that it undergoes no kind of change in the stomach of the bee), it is disgorged again through the mouth, and not as Swammerdam erroneously imagined, through a small orifice in the end of the trunk. The process of this operation may be easily discovered in glass hives, where the cells reach to the glass, and have only four sides of wax, the glass serving for the other two sides.

The bee that comes loaded to the cell thrusts its head very deep into it, and discharges the honey from its stomach in a very little time, and seemingly with very little trouble, by the mouth. One bee succeeds another till the whole cell is filled. In this work, it has been often observed, that what appears to be the last quantity of honey disgorged into the cell is always of a different appearance from the rest: this is of the nature of a cream, and is always much thicker than the rest of the honey, which appears of one colour and consistence; it seems to be very useful in the economy of the work, serving at once to keep the honey moist, and to prevent its running out by any accident. Though this cream or crust appears to be the last voided quantity, it is not so in reality, for it seems to have been gathered together from the first; and every fresh quantity of honey is added under, not upon its surface. To this purpose it is always observed, that the

bee which comes loaded to the cell does not at once discharge its honey into it, but entering into the cell as deep as possible, it puts forward the anterior pair of legs, and with them pierces a hole through the crust or cream. While this hole is kept open by the feet, the bee disgorges the honey in large drops from the mouth; these, falling into the hole made by the feet, mix with the mass below, and the bee, before it flies off, remodels the crust, and closes up the hole; and this is regularly done by every bee that contributes to the general store of the cell.

The several cells of the combs in every hive are differently filled with honey, and for different purposes: some is laid up for immediate consumption, on occasions of bad weather and the like accidents, or for the use of those bees that in good weather stay at home to work, and are not supplied in any other way by those which have been abroad collecting honey; and some is more carefully preserved and destined for the support of the swarm in the winter. Whenever any cell is filled with honey, it is always closed up, and never opened again, till all the honey in the cells which were not full is expended. The manner in which the bees make the lids or covers of the cells is this: they form a circle or ring of wax just within the verge of the cell; to this they add another such ring, and then another within that; and thus the aperture is rendered smaller and smaller, and by a continuance of the same operation is finally closed, the lid being composed of a vast number of concentric circles. This covering is designed for preserving the inclosed honey in a state of proper consistence, for a winter store.

Honey has been supposed by many to be the only food of the bees who collect it; but this is evidently erroneous. The farina of flowers serves as food for young bees, whilst they are in the form of maggots, but it is not so certain whether the old bees eat it or not; after which some say it is again thrown out of their mouths in form of wax, and used in the structure of their cells; but others absolutely deny this, because the farina of different flowers varies in colour, whereas the wax is uniformly white.

Honey and wax form so considerable an article in the riches of a kingdom, that M. Reaumur strongly recommended to the court of France, the encouragement of those who raise swarms of bees, by deducting something from their taxes in proportion to every hive of bees kept by them above a certain number. And as bees are so easily raised, and kept with so little expence and trouble, it is a wonder that they are not more generally propagated in the kingdom. One great means of preserving and multiplying the bees would be the abolishing of that barbarous as well as prejudicial custom, which has hitherto very generally prevailed, of destroying the whole hive of bees in order to obtain the honey. Reaumur's Hist. Inf. vol. x. p. 89, &c. See HIVE.

Honey is an article from which the cottage labourer frequently derives a very beneficial profit; and this would still be considerably larger, if greater care was taken to have a more abundant supply of flowers in or near the situations in which the bees are kept.

There are many circumstances necessary to the forming of good honey, such as a warm and clear air, a good state of health of the bees, and a quantity of aromatic and sweet flowers in the neighbourhood of their hives. Some naturalists suppose that honey is of a different colour, according to the difference of the flowers or plants from which the bees suck it. The ancients esteemed that of lilies and roses to be the best; and Strabo relates, that there is a kind of honey in Pontus which is a strong poison, being procured

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by bees which feed upon aconite and hemlock. F. Lambert, however, assures us of the contrary, and affirms it to be the best honey in the world, on account of the great quantity of baum that grows there. He adds, that there is another very white kind of honey, hard as sugar, which does not stick to the hands. At present, the honey of Narbonne, in France, is held to excel all others, on account of the rosemary which abounds there. Bees are uncommonly fond of the lime-tree, the privet, and phillyrea; and in Lithuania, there are large quantities of wild bees, who lodge in hollow trees in woods, and collect their honey chiefly from the lime; so that when the season happens to be unfavourable at the time of the blowing of the lime, it is succeeded by a scarcity of honey. However, it is not to be supposed, that the bee confines itself to one particular flower; nor does it appear that the honey collected from one kind of flower differs essentially from that which is the produce of another; the only difference being in the quantity, colour, or some slight flavour from the flower. Excellent honey has been produced where nothing grew but nettles and other weeds.

The honey taken out of the hives in the beginning of summer is preferable to that gathered in autumn, since the first is the season in which the bees are most vigorous, and the plants in their flowering state.

We have two kinds of honey, the *white* and *yellow*.

The *white*, *mel album*, called also *virgin* honey, is that deposited in clean new cells, which, when first formed, are of a pure white colour; but when the combs are old, especially if bees have been bred in them, they become foul and discoloured, and vitiate the honey lodged in them. New honey is nearly as fluid as water, by age it acquires a greater degree of consistence, and the cold of winter frequently congeals it. The second kind, or *mel flavum*, is squeezed from the combs in a press, after having first softened them with a little water over the fire. There is also an intermediate sort of a yellowish white colour, drawn by expression, without fire. That which runs spontaneously is purer than the expressed; a quantity of the wax and other impurities being forced out along with it by the pressure, especially when the combs are previously heated. The best sort of honey is of a thick consistence, easily and totally soluble in cold water, of a whitish colour, an agreeable smell, and a very pleasant taste.

Honey, exposed to a gentle heat, as that of a water-bath, becomes thin, and throws up to its surface its waxy impurities, together with the meal or flower sometimes fraudulently mingled with it, which may be thus separated by despumation, so as to leave the honey pure, and to form the *mel despumatum* or clarified honey. On continuing the heat, there rises a considerable quantity of aqueous fluid, impregnated with the fine smell of the honey; the inspissated residuum, like the honey at first, dissolves both in water and in rectified spirit, and promotes the union of oily and resinous substances with watery liquors. By treating the inspissated mass with moist clay, as practised by the sugar-baker for purifying sugar from its unctuous treacly matter, the unctuous parts of honey may in like manner be separated, and its pure sweet matter obtained in the form of a solid, saline, white concrete.

The specific gravity of clarified honey has been fixed at 1.31; but the tenacity of medicated honeys in general is the more usual test of the proper consistence. If a portion of it, when cold, be divided by the edge of a spoon, it ought to unite again very slowly.

It is observed, that the boiling of honey, though it dissipates great part of its odorous matter, and thus proves in

some cases injurious to it, is nevertheless in other cases of advantage. There are particular constitutions with which honey disagrees, and in which very small quantities occasion gripes, purging, and great disorders; but boiling deprives it of that quality which produces these effects. Neumann's Chem. by Lewis, p. 330. Lewis's Mat. Med. p. 376.

This juice is an useful sweet for medicinal as well as domestic purposes: it is more aperient and detergent than the simple sweet prepared from the sugar-cane; and particularly serviceable for promoting expectoration in disorders of the breast, and as an ingredient in cooling and detergent gargarisms. For these and other similar intentions it is sometimes mixed with vinegar in the proportion of two pounds of clarified honey to one pint of the acetic acid, boiled down to a proper consistence in a glass vessel over a slow fire, and thus forms the oxymel simple of the shops; it is also impregnated with the virtues of different vegetables, by boiling it in the same manner with their juice or infusions, till the watery parts of the juice or infusion have exhales and left the active matter incorporated with the honey. See OXYMEL.

Honey contains a quantity of fixed air, and is antiseptic as well as detergent and diuretic. Sir John Pringle recommends one pound and a quarter to be taken regularly every week in cases of the gravel, or when the kidneys are loaded with sand.

Honey is the basis of several compositions in pharmacy, though in this respect it is less used than formerly. Of honey, with the addition of roses or violets, mercurialis, &c. (see OXYMEL), was made *mel rosatum*, *mercuriale*, *hel-leboratum*, &c. There is also a *mel scilliticum*, or a preparation of squills; *mel passulatum*, made with raisins boiled in hot water; and *mel anihosatum*, made with rosemary-flowers.

Rose honey, *mel rosa*, *rosaceum*, or *rosatum*, is prepared by macerating four ounces of red rose petals dried in three pints of boiling water for six hours, and then straining, and afterwards adding five pounds of clarified honey to the strained liquor, and by means of a water-bath, boiling it closely down to a proper consistence.

Honey of borax, *mel boracis*, is prepared by mixing a dram of borate of soda powdered with an ounce of clarified honey. This combination is usefully employed as a detergent in apthous affections of the fauces.

Honey is also an ingredient in several drinks, as mum, metheglin, &c.

The chemists also draw a water, a spirit, an oil, &c. from honey.

Mr. Lemery, in his analysis of honey, observes, that two pounds of fine honey distilled in balneo Mariæ, afford six ounces of clear water of an insipid taste and of the smell of honey: this is commonly called the *dew* of honey. A larger quantity of phlegm may be procured by continuing the distillation, but it becomes foul. This liquor, though insipid to the taste, yet contains a latent acid, for it reddens the turnsole; but it neither ferments with the volatile nor fixed alkalies. The cucurbit being now placed in the sand heat, there come over four ounces of a yellowish pellucid water of an acrid taste, of a strong smell of honey, and somewhat empyreumatic: this liquor reddens the turnsole colour more than the former. The fire being increased, there arise white clouds, which fill the head of the cucurbit and the receiver, and these finally condense into a third liquor, which is called the spirit of honey. This will be about three ounces in quantity, and of a red colour and empyreumatic smell, yet with an agreeable flavour, and of

HONEY.

an acrid and burning taste. This is a stronger acid than either of the former, and ferments with an alkali.

The fire being again increased, more clouds arise, and, in fine, there is a fourth liquor produced; this is in quantity about two ounces, of an orange colour, and of an acid taste, but less acrid than the third liquor, as it contains more oil, which softens and sweetens it. Like the former, it ferments with alkalies, and reddens the colour of turnsole. When the distillation is thus finished, there will remain in the cucurbit fifteen ounces and a half of a light spongy black coal. (Mem. Acad. Par. 1706.) This is to be then put under a retort for a fresh distillation, and a strong fire under this vessel will raise from it seven ounces of a reddish brown liquor, which stains the fingers to an orange colour, of a burnt smell, yet with something agreeable in it, and of an acid and very acrid pungent taste. Besides this, there come over two drams of a thick black oil, looking like tar; this also was of an acrid taste, which was owing to some of the salts of the honey being blended with it. There is much more oil contained in the honey, but it does not come over separate but blended with the other liquors; and after they have stood some days precipitates itself from them, and is found sticking to the sides and bottom of the vessel. The matter remaining in the retort is about seven ounces of a black coal, of a light spongy texture, and of a taste almost insipid, and only seeming to contain a little salt. We see by this process, that thirty-two ounces of honey yield twenty-four ounces and two drams of liquor, that being the difference in weight, between the honey when first put in, and the last *caput mortuum*. Twenty-two ounces and six drams are the quantity here preserved of the several liquors, the rest having escaped through the junctures of the vessels, as will always be the case in such distillations. Id. *ibid*.

The *caput mortuum* of this, and several other distillations of honey, the whole making three pounds and a half, were put into an unglazed earthen pot, and calcined over the fire for ten hours; this readily took fire like common charcoal, and burnt till it lost ten ounces in weight, but without falling into ashes. The remaining coal had then a more saline taste than before. Any acid liquor poured upon this fermented, as with the common alkalies; and when thrown into water to make a *lixivium*, it bubbled in the manner of quick-lime thrown into water; and in the common way of making the *lixivial* salts, this yielded a dram and a half of an acrid alkaline one.

It is remarkable, that the calcined *caput mortuum* of honey contains, like other vegetable ashes, true particles of iron, which adhere to a knife touched with a magnet.

HONEY, Wild. St. Adaman, abbot of Hii, in his description of the holy places, observes, that in the place where St. John the Baptist lived in the Desert, there are locusts which the poor people boil with oil, and a sort of herbs with large, long leaves of a milk colour, and a taste like that of honey; and that this is what in scripture is called *wild* honey. See **ACRIDOPHAGI**.

HONEY-bird, in *Ornithology*. See **TROCHILUS**.

HONEY-buzzard, the English name of the *Buteo apivorus*. See **FALCO Apivorus**.

HONEY of Roses. See **ROSE**, and **HONEY**, *supra*.

HONEY-comb, a waxen structure, full of cells; framed by the bees to deposit their honey, eggs, &c. in.

The construction of the honey-comb seems one of the most surprising parts of the work of insects, and the materials of which it is composed, which though evidently collect-

ed from flowers of plants, yet do not, that we know of, exist in them in that form, have given great cause of speculation to the curious. The regular structure of the comb is also equally wonderful. When the several cells in it are examined, it should seem that the nicest rules of geometry had been consulted for its composition, and all the advantages that could be wished or desired in a thing of that kind are evidently found in it.

The bees, in the structure of this receptacle of their honey, seem to have resolved a geometrical problem, far from an easy one, and indeed clogged with so many conditions, that it might have puzzled able proficients in that science. This may be expressed in these words: a quantity of wax being given, to form it into a number of angular and equal cells, of a determinate capacity, but the greatest that can be made with that quantity of wax, and, at the same time, that these cells shall be so disposed as to take up as little room as possible in the hive. In order to this last condition, it is necessary that the cells touch one another, in such a manner, that there be no angular space nor cavity between them. The bees have effected all this by making the cells all hexangular, or tubes of six equal sides; triangular, quadrangular, and some other figures; for the cells might have been indeed so disposed between one another as to leave no space; but then an equal number of them could not be made with the same quantity of wax. The body of the bee being rounded, it will also be received into an hexangular cell, without leaving such large spaces as it must if received into a triangular or square one.

The method of making two sets of cells in each comb, is also admirably contrived to save the expence of wax, since, had they been made single, every comb must have had its peculiar base, and every set of cells their bottom of wax; whereas one bottom now serves to two cells, and there is but one plate of wax in the centre of a double comb. There is, however, this farther difficulty attending it, that the several cells are not so many hexagonal tubes with flat and broad bases, or tubes of an equal breadth all the way; but they are truly pointed at the bottom, being every one of them a hexangular cell, with a pyramidal base, and forming that kind of figure, as Maraldi and Reaumur first discovered, which requires at least wax for containing the same quantity of honey. Each of these bases is composed of three equal rhombuses, and each base, in this manner, becomes the base of three other cells on the opposite side of the comb.

This is easily demonstrated to those who understand geometry, by means of the several figures and positions of the opposite bases of the cells of the two sides of the comb; but the most familiar explication of it to a common observer, is to stick three small pins through the base of any one cell, each in the centre of the rhomb that makes one side of that base: if, after this, the comb be turned, the three pins will be found in the centres of three different cells of the opposite side.

The obtuse angles of the three equal rhombuses that form the base, are found to be the doubles of an angle, (which often comes under consideration in questions relating to *maxima* and *minima*), whose tangent is to the radius as the diagonal is to the side of the square. By this construction, three of the six solid angles at the base, that correspond to the angles of the hexagon, are equal to each other, and also to the solid angle at the apex of the figure, each of which solid angles is respectively formed from three equal, plane, obtuse angles; and the other three solid angles are also equal to each other, but each of them is formed by four equal, plane,

plane, acute angles, which are the supplements of the former obtuse angles. Monf. Maraldi found, by mensuration, that the obtuse angles of the rhombuses were nearly 110° , and observed, that if they were supposed equal to each other, each of them must be $109^\circ 28'$; and Mr. Koenig, by the method of infinitesimals, found, that this angle, in order to employ the least wax possible in a cell of the same capacity, ought to be $109^\circ 26'$. Mr. Maclaurin has also demonstrated, from the principles of common geometry, that the most advantageous angle is that which results from the supposed equality of the three plane angles forming the solid angle. We shall subjoin the demonstration for the sake of the mathematical reader.

Let GN and NM (*Plate VIII. Geometry, figs. 98 and 99.*) represent any two adjoining sides of the hexagon, or the section of the cell perpendicularly to its length. The sides of the cell are not complete parallelograms, as CGNK, BMNK, but trapezia, CGNE, BMNE, to which a rhombus CEB ϵ is fitted at OE, that has the opposite point ϵ in the apex of the figure; so that three rhombuses of this kind, with six trapezia, may complete the figure of the cell. Let O be the centre of the hexagon, of which CK and KB are adjoining sides; join CB and KO intersecting in A; and, because COB is equal to CKB, and KE equal to O ϵ , the solid EBCK is equal to the solid ϵ BCO; whence it follows, that the solid content of the cell will be the same, wherever the point E is taken in the right line KN, the points C, K, B, G, N, and M, being given. It is, therefore, necessary to enquire, where the point E is to be taken in KN, so that the area of the rhombus CEB ϵ , together with that of the two trapezia CGNE, ENMB, may form the least superficies. Because E ϵ is perpendicular to BC in A, the area of the rhombus is $AE \times BC$, and that of the trapezia $CG + EN \times KC$; the sum of these is $AE \times BC + 2KN \times KC - KE \times KC$; and because $2KN \times KC$ is invariable, we are to enquire when $AE \times BC - KE \times KC$ is a minimum?

Suppose the point L to be so taken upon KN, that KL may be to AL as KC is to BC. From the centre A describe in the plane AKE, with the radius AE, an arc ER meeting AL, produced, if necessary, in R: let EV be perpendicular to AR in V, and KH be perpendicular to the same in H; then the triangles LEV, LKH, LAK, being similar, we have $LV : LE :: LH : LK :: LA : LC :: KC : BC$ by the supposition. Hence, when E is between L and N, we have $LH + LV (= VH) : LK + LE (= KE) :: KC : BC$; and when E is between K and L, we have $LH - LV (= VH) : LK - LE (= KE) :: KC : BC$; that is, in both cases we have $KE \times KC = VH \times BC$; and consequently $AE \times BC - KE \times KC = AE \times BC - VH \times BC = AE - VH \times BC = AR - VH \times BC = AH + VR \times BC$: which expression, because AH and BC do not vary, is evidently least when VR vanishes, *i. e.* when E is upon L. Therefore CLB is the rhombus of the most advantageous form in respect of frugality, when KL is to AL as KC is to BC. But as OK is bisected in A, $KC^2 = OK^2 = 4AK^2$, and $AC^2 = 3AK^2$, or $BC = 2AC = 2\sqrt{3} \times AK$; consequently, $KC : BC :: 2AK : 2\sqrt{3} \times AK :: 1 : \sqrt{3}$; and $KL : AL :: (KC : BC ::) 1 : \sqrt{3}$; or $AL : AK :: \sqrt{3} : \sqrt{2}$; and (because $AK : AC :: 1 : \sqrt{3}$) $AL : AC :: 1 : \sqrt{2}$; *i. e.* the angle CLA is that, whose tangent is to the radius as $\sqrt{2}$ to 1, or as 14142135 to 1000000; and therefore it

is $54^\circ 44' 8''$, and consequently the angle of the rhombus of the best form is that of $109^\circ 28' 16''$.

By this solution it is easy to estimate what saving is obtained by means of this construction.

If the base were flat, and not of the pyramidal form above described, then, besides completing the parallelograms CGNK and BMNK, the surface of the base had would be $3CB \times AK$; what they really do form amounts in surface to the same parallelograms, and $3CB \times AH$; the savings therefore amount to $3CB \times AK - AH = 3CB \times AH \times \frac{\sqrt{3} - \sqrt{2}}{\sqrt{2}}$, which is almost a fourth

part of the pains and expence of wax they bestow above what was necessary for completing the parallelogram sides of the cells.

Mr. Maclaurin has also demonstrated, that the plane angles CLB, CLN, and BLN, which form the solid angle at L or the apex at I, are equal to each other; from which it is obvious, that the four acute, plane angles, which form the solid angle at C or B, are likewise mutually equal. It may be also added, that if the cells had been of any other form than hexagonal, and the bases had still been pyramidal, these must have been terminated by trapezia, and not by rhombuses, and therefore they would have been less regular, because OA and AK would have been unequal. Nor could there have been room for such an advantageous or frugal construction as that we have described, because the solid contents of the cell would have increased with the right line KE. See *Phil. Trans. abr. vol. ix. p. 2, &c.*

This construction not only occasions a very great saving of the wax or matter of the comb; but besides this, there is another great advantage, which is, that the angles, resulting from this combination of the bases, greatly strengthen the whole work.

The matter of which the comb is made, costs the bees so much pains and labour in collecting, that it is no wonder they are careful and sparing of it in the work. The sides of the cells are all much thinner than the finest paper, and yet they are so strengthened by their disposition, that they are able to resist all the motions of the bee when within them, as they are very frequently obliged to be. The effect of their thrusting their bodies into the cells, would be the burling of those cells at the top, were not this well guarded against. But to prevent this, the creatures extend a cord or roll of wax round the verge of every cell, in such a manner, that it is scarcely possible they should split in that particular part. This cord or roll is at least three times as thick as the sides of the cell, and is even much thicker and stronger at the angles of the cell than elsewhere; so that the aperture of each cell is not regularly hexagonal, though its inner cavity be perfectly so.

The bases of the cells are not always perfectly trilateral; sometimes, instead of the three rhombs they should be composed of, they consist of four pieces, the bee having begun her work wrong; but then it is admirable to observe, how nicely the two smaller pieces are afterwards joined, that the angle they make may be as nearly as possible equal to that of one of the rhombs, so that the base of the cell still remains very nearly trilateral.

It would be a most desirable thing to see the bees at work in their making these elegant and regular fabrics; but it is scarcely possible to see any thing of this kind distinctly, even with the advantages of glass hives; for no bee ever works singly on this occasion, but wherever the fabric is erecting, there are numbers together, all trying to assist one another; and their motions are so swift, and so hid by their standing

before

before one another, that very little is to be seen of them. New bees are every moment coming to the place, and old ones going away; and very frequently those which arrive late are dispatched away immediately after they arrive. There are only some very short moments in which the glasses of the hives can give a view of the creatures regularly employed in their work, for the moment that one sees a bee at work in building, that moment we see one either fly off, or some other bee get before her, so as to hinder the view.

These momentary fights, however, are sufficient to make it plain, that the bee uses her teeth in modelling and fashioning the wax. The side of a cell is always received between the two teeth on this occasion, and by means of repeated blows on each side from each tooth, the side is brought to a proper thinness, and the wax is by the same means wrought up to a proper consistence and firmness.

The celerity with which a swarm of bees received into a hive, where they find themselves lodged to their minds, bring their works of the combs to perfection, is amazing. In a week's time, when the weather favours, the half or two-thirds of a hive will be filled with combs. There are vast numbers at work all at once, and that they may not incommode one another, they do not work upon the first comb till it is finished; but when the foundation of that is laid, they go to work upon another; so that there are often the beginnings of three or four stories made at once, and so many swarms allotted to the carrying on the work of each.

The several combs are all placed parallel one to another, and hang perpendicularly from the top of the hive to the bottom; they begin each comb at the top or upper part of the hive, and carry it down to the floor, from side to side; and there is such a space left between them, that the bees can easily pass between: there are also holes made through the substances of the several combs, by which they pass from the space that lies between one pair of combs and another. They often place a part of the combs in a contrary direction to the rest; so that while the others are placed horizontally, these stand perpendicular: there are also several other directions, in which they are disposed, which are easily accounted for from the nature of the place, and are always found to be the very best that could be used for the occasion.

Though the sides of all the cells are extremely thin, yet the combs are very heavy when full of honey. This might endanger their breaking their hold, if only sustained from the top; and for this reason, the bees give them several additional supports in whatever places they can, often fastening them in many places one to another, and often fixing them to the sides of the edifice by large and solid lumps of wax.

It has generally been supposed that every bee of a swarm has its particular cell in some comb which was its own, and contained honey for its peculiar food; but the use of the glass hives has shewn us that all the cells are used in common. Reaumur, *Hist. Inf.* vol. ix. p. 282. vol. x. p. 21, &c.

HONEY-comb, in *Gunnery*, is a flaw in the metal of a piece of ordnance, when it is ill cast and spongy.

HONEY-comb-stone, in *Natural History*, the name given by many authors to a species of fossil coral, which is usually found in large masses, and those full of large hexagonal cells, resembling those of a honey-comb. These are but lightly striated, and usually run deep into the stone.

HONEY-comb-stone, or *Lapis favaginofus*, is enumerated by Dr. Woodward in his *Method of Fossils*, and is mentioned by Dr. Plot as found in the north-east part of Staf-

fordshire, which refer, it seems, to a species of coralline in the lime-stone rocks.

HONEY-dew, a term frequently applied to a clammy saccharine substance, which is often seen covering the leaves and other parts of different kinds of trees and plants, at some particular seasons of the year. It does not appear that the cause of this extraordinary appearance is yet fully understood, as it has not, by any means, been well ascertained, whether it derives its origin from external circumstances, or some morbid affection of the vegetables themselves. The author of *Phytologia* appears to incline to the latter supposition, and conceives it to be an excretion from the parts of the plants which are affected with it. Indeed, it seems not improbable but that there may be some local derangement in the parts of the plants which are covered with this sticky material.

Gassendus holds, that a viscid juice, transpiring out of the leaves, helps to compose this honey; or to convert the dew, falling on them, into a honey-substance, which before had nothing of it: hence he accounts for the reason why we find it on some trees and not on others.

This honey-dew, falling on the ears and stalks of wheat, besmears them with a different colour from the natural; and, being of a clammy substance, so binds up the young, tender, and close ears of the wheat, by the heat of the sun, that it prevents the growth and completing of the perfect grain therein.

Hops, when in flower, are subject to the distemper called the honey-dew, which appears in the form of a meal, and is found by the microscope to contain the eggs of small insects, which fly about in swarms near the time when the hop is in flower, and gnaw the leaves and shoots. Several methods have been proposed for preventing the damage arising from this dew; particularly by surrounding the hop-hills with hot dung, or causing wood-ashes to be scattered with the wind over the hops at the time when the mealy dew falls. But the most effectual way of preventing its ill effects is to strip off the leaves, whereby the small insects contained in it perish at once, and before fresh leaves spring forth, their season of breeding is past.

A shower of rain, succeeding presently after the fall thereof, or the wind blowing stiffly, are the only natural remedies against it. See **APIIS**, **DEW**, **MILDEW**, and **Perspiration of PLANTS**.

HONEY-flower, in *Botany*, &c. See **MELIANTHUS**.

HONEY-grass, the common name of a sort of grass that is occasionally found in shady situations, but which is not found of much utility as the food of domestic animals. See **MELLICA**.

HONEY-guide, in *Ornithology*. See **CUCULUS Indicator**.

HONEY-Island, in *Geography*, a small island in the Atlantic, near the coast of Guinea. N. lat. 10° 18'. W. long. 15°.

HONEY-locust, or *three-thorned Acacia*, in *Botany*. See **GLEDITSIA**.

HONEY-suckle, in *Botany and Gardening*. See **LONICERA**.

HONEY-suckle, *African-fly*. See **HALLERIA**.

HONEY-suckle, *American upright*. See **AZALEA**.

HONEY-suckle, *French*. See **HEDYSARUM**.

HONEY-suckle Clover, in *Agriculture*, a term not unfrequently made use of to signify white clover. It is likewise often simply termed honey-suckle. See **CLOVER**, and **White CLOVER**.

HONEY-suckle, *Trumpet*. See **HONEY-suckle**, *supra*.

HONEY-suckle Grass. See **TREFOIL**.

HONEY-wort. See CERINTHE.

HONEYYOE, in *Geography*, a lake of America, in the Genesee country, New York, W. of Canandarque lake, five miles long and three broad.

HONFLEUR, a town of France, in the department of the Calvados, and chief place of a canton, in the district of Pont l'Evêque; seven miles N.N.E. of Pont l'Evêque. The place contains 9,600, and the canton 16,107 inhabitants, on a territory of 100 kilometres, in 16 communes. N. lat. $49^{\circ} 25'$. E. long. $0^{\circ} 19'$.

HONGIE, a town of Austrian Poland, in Galicia; 30 miles W.S.W. of Halicz.

HONGILAX, a town of Sweden, in the government of Abo; 35 miles S. of Biorneborg.

HONG-TCHEOU, a town of the kingdom of Corea; 20 miles S.S.E. of Haimen.

HONG-TSE, a large lake of China, which discharges its waters into the Hoang; 60 miles from the sea.

HONHAY, a town of Bengal; nine miles S.S.E. of Ramgur.

HON-HOTOU, a lake of Chinese Tartary; 24 miles in circumference. N. lat. $48^{\circ} 29'$. E. long. $92^{\circ} 46'$.

HONI *soit qui mal y pense*, q. d. *evil to him that thinks evil*; the motto of the most noble order of the knights of the Garter. See GARTER and MOTTO.

HONIDA, in *Geography*, a town of Persia, in the province of Irak; 45 miles E.N.E. of Gnerden.

HONIGFELTZ, a town of Prussia, in Pomerelia; 15 miles S. of Marienburg.

HONIMAO, or **ULIASSER**, one of the Molucca islands, about 9 miles long, and from 3 to 5 wide. The land is fertile, and its chief productions are rice and cloves. S. lat. $3^{\circ} 30'$. E. long. $129^{\circ} 2'$.

HONINGDAEL, a town of Norway, in the diocese of Drontheim; 80 miles S.W. of Romsdal.

HONITON, is a borough, market town, and parish in the hundred of Axminster, and county of Devon, England. It consists principally of one broad handsome street, running from east to west, and another crossing it at right angles: through the former flows a small stream, from which the inhabitants are supplied by a dipping place opposite to almost every door. The buildings are mostly modern; the town having suffered considerably by fire at different times. In the year 1747, three-fourths of the houses were reduced to ashes, and several hundreds of the labouring inhabitants thrown out of employ. In 1765, nearly 180 dwellings, and other buildings, were destroyed: another fire, in 1790, consumed 30 more; and a fourth, in 1797, the same number, together with the bank. The town is now in a state of great improvement; and the buildings are in general covered with slate: the number of houses returned, under the late act, was 557; the inhabitants 2377. The chief article of manufacture is broad lace, and edgings, of which considerable quantities are disposed of in the metropolis. The parish church is situated on an eminence at the distance of about half a mile from the town. It was originally a small chapel for mendicant friars, but was enlarged about the year 1482, chiefly at the expence of Courtenay, bishop of Exeter; who also gave the curious screen which separates the chancel from the nave. The ancient parochial church is supposed to have stood in the town on the spot now occupied by Allhallow's chapel; which is a neat structure, with a square embattled tower of flint; and was erected by subscription, in place of an older edifice, about the year 1765. Besides these places of religious worship, here are three meeting-houses for the respective denominations of Independents, Baptists, and Presbyterians. The education of the poorer classes is partly

provided for in a small free-school for boys, and a school of industry for girls: the latter is supported by the subscription of females. This town possessed the privilege of a market previous to the reign of king John, by whose direction the day on which it was held was changed from Sunday to Saturday. Honiton sends two members to parliament; but, though an ancient borough by prescription, it was only twice represented prior to the time of Charles I.: the first return was made in the twenty-eighth year of Edward I. The right of election, which was formerly extended to every housekeeper not receiving alms, is now vested solely in the burghage holders paying scot and lot: the number of voters is about 350. The government of the town is under the direction of a portreeve and bailiff, who are annually chosen at the court of the lord of the manor. Honiton is 159 miles distant from London. Polwhele's History and Antiquities of Devonshire, fol.

HONNOCHETO LAKE, a lake of West Florida. N. lat. $31^{\circ} 22'$. W. long. $91^{\circ} 27'$.

HONOMINIES, a river of America, in the N.W. territory, which runs S.E. into Puan bay. Between the head of this river and lake Superior is a short portage.

HONOPOLOGAN, a town of the island of Ceylon; 55 miles N.N.W. of Parroah.

HONORAT, a small island in the Mediterranean, near the coast of France. N. lat. $43^{\circ} 30'$. E. long. $7^{\circ} 7'$.

HONORIACI, in *Antiquity*, a species or order of soldiery under the eastern empire, who introduced the Goths, Vandals, Alani, Suevi, &c., into Spain.

Didymus and Verinianus, two brothers, had, with great vigilance and valour, defended the passages of the Pyreneans against the Barbarians, for some time, at their own expence; but being at length killed, the emperor Constantius appointed the honoriaci to defend those passages, who, not contented to lay them open to all the nations of the North, then ravaging the Gauls, joined themselves to them.

HONORIS RESPECTUM, *Challenge propter*, in *Law*. See CHALLENGE.

HONORIUS, emperor of the West, in *Biography*, second son of the great Theodosius, was born in 384; obtained the title of Augustus, with his brother Arcadius, in 393, and succeeded to his portion of the empire at his father's death in 395. The reins of government were, during his minority, placed in the hands of the illustrious general Stilicho, whose daughter he married in 398. As his character opened he appeared ill adapted to his high station, and was addicted to puerile amusements, void alike of vigour and talents, and in every respect unfit to wield the sceptre of a mighty people. The times, however, wore a serious aspect; and the danger to which the empire was exposed required wisdom and fortitude. The revolt of the Goths, and an invasion of Italy by Alaric, with whom Stilicho had been obliged to make a kind of compromise, so alarmed the young emperor, that in 403 he fled from his palace, and was for a time besieged by the Goths in a town of Liguria, in which he had taken shelter. His faithful general Stilicho came to his release, and, by the defeat of Alaric, freed Italy from present danger. The pageant prince was led to Rome, and had the honour of a triumph, at which, for the last time, there was an exhibition of the inhuman combats of gladiators. After this the emperor fixed the seat of empire at Ravenna: he conquered his enemies by his generals, being resolved never more to expose his sacred person to any risk: he suffered himself to be governed by his ministers, who took advantage of their imperial master's indolence and inactivity. He died of a dropsy, in the 39th year of his age. Under Honorius and his brother the Roman power was divided

vided into two different empires. The successors of Honorius, who fixed their residence at Rome, were called emperors of the West, and the successors of Arcadius, who sat on the throne of Constantinople, were distinguished by the title of emperors of the Eastern Roman empire. Honorius was twice married, but left no issue. Gibbon. Univer. Hist.

HONORIUS I., pope, son of Petronius, a person of consular dignity, was chosen to fill the Roman see on the death of Boniface V., in the year 626. The most remarkable circumstance in the life of this pope was, his having been induced to give his sanction to the opinion of the Monothelites, who maintained that in Christ there was only one will, one operation, for which he was solemnly condemned by the sixth general council, in the pontificate of pope Agatho. Some account of the sects MONOTHELITES, and MONOPHYTES, will be found under their respective articles. Honorius probably knew little about the matter, nor was able to attach any precise and definite meaning to the expressions which he was led to make use of. He died in 638, after a reign of nearly thirteen years. He is greatly praised for having employed diligence and zeal in embellishing churches, and other consecrated places, with the most pompous and magnificent ornaments. Some of his letters are extant in the fifth volume of the "Collect. Concil." He is author of an epigram on the apostles looking up towards heaven with astonishment at the ascension of Christ, which is to be found in the twelfth volume of the Bibl. Patr. Moreri. Bower.

HONORIUS II., pope, whose original name was Lambert, was a native of the province of Bologna. Having embraced the ecclesiastical life he was preferred by pope Paschal II. to the episcopal see of Veletri, and afterwards translated to that of Ostia. Upon the death of Calixtus in 1124, Honorius was elected to the popedom. Soon after his consecration he issued a sentence of excommunication against William, the son of Robert count of Normandy, for having married within the forbidden degree of consanguinity, and for having publicly burnt a letter sent to him by the pope's legate, in which his marriage was declared null. On the death of the emperor Henry V., in the year 1125, Honorius sent his legates into Germany, to assist at the election of a new king, in whose presence Lotharius was anointed with the usual ceremonies. In the following year the pope succeeded in persuading Henry I. of England to admit a legate into his kingdom, whose usurpations quickly provoked the spirited opposition of the clergy and laity. In 1127, upon the death of William, duke of Apulia, without leaving any issue, his uncle Roger, count of Sicily, passed over into Italy, and took possession of his nephew's dominions as his next heir. But Honorius having heard of his proceedings, pretended that the late duke had, by his last will, left his dominions, and whatever else he was possessed of, to St. Peter, and instantly denounced a sentence of excommunication against Roger. The question was disputed at the point of the sword, but the army of the prince prevailed against that of the pope, and his holiness was glad to grant him the investiture to the duchy. Honorius died in 1130. Twelve of his letters are preserved in the tenth volume of the Collect. Concil. Moreri. Bower.

HONORIUS III. pope, whose former name was Cencius Sabelli, was a descendant from an illustrious family, and a native of Rome, where he discharged several ecclesiastical employments with great reputation, and was held in high respect for his learning and probity. In 1216, having already filled the posts of cardinal-deacon and cardinal-priest, he was unanimously elected pope. The first act of his pontificate was to send letters to all Christian princes to acquaint them with his promotion, and to exhort them to send succours,

without delay, to the armies of the crusaders in the East. Their success was the object of his utmost solicitude; as was likewise the destruction of the Albigenses in France, which he instigated the Catholics to attempt, by every method of persuasion adapted to produce an effect on credulous or superstitious minds. In 1217, Henry, emperor of Constantinople, dying without issue, the princes of the crusade chose Peter, count of Auxerre, his brother-in-law, for his successor, who, as soon as he heard of his election, left France, together with his wife, and repaired to Rome, where they were crowned by Honorius. In the year 1219, Reginald, king of the Isle of Man, at that time an independent kingdom, apprehensive that it might be invaded and subdued by the kings of England, resolved to engage the protection of the sovereign pontiff by surrendering himself a vassal of the apostolic see. He accordingly made a donation of the whole island to Honorius as fief of the Roman church, and afterwards received the investiture of it, upon binding himself and his heirs to pay a yearly stipulated sum to the pope as an acknowledgment of vassalage. From this time the pope was eager in the attempt to dispossess the infidels of the Holy Land, and was particularly desirous of engaging in the cause the emperor Frederic II. But this prince excused himself from time to time by different pleas, which his holiness was obliged to admit, till at length, in 1227, he died, after a pontificate of nearly eleven years. Honorius was a man of considerable learning for the age in which he lived, and was author of several works, of which there are still extant, "Sermons;" the "Life of Pope Celestine III.;" "A Statement of all the Revenues of the Roman Church;" and many others of less moment. Several of his letters are inserted in the eleventh volume of the Collect. Concil. Moreri. Bower.

HONORIUS IV. pope, who, before his elevation to the popedom, was called James Sabelli, or Savelli, was descended from the same family with Honorius III., and was created cardinal deacon by pope Urban VI. in 1261. In 1285 he was elected pope, as successor to Martin IV., and on this occasion he assumed the name of Honorius IV. He was so much afflicted with the gout, that he was unable to solemnize the mass in a proper manner, and only in a sitting posture; but he had a mind equal to all the difficulties of his situation. One of his earliest acts was to renew the anathemas which his predecessor had fulminated against Peter of Arragon, and by causing a crusade to be preached against him in France, he raised a powerful army in that country, at the head of which king Philip entered Arragon, and gained a bloody victory over Peter. That prince died in a short time after the battle, and by his will devised the kingdom of Arragon to his son Alphonfus, and that of Sicily to his son James. Honorius no sooner heard of his death, and the distribution which he had made of his territories, than he issued his bull, commanding Alphonfus to release, without delay, Charles, prince of Salerno, who had been taken prisoner by his father's fleet, and, at the same time, ordering James to quit the island of Sicily, and to deliver it up to Charles as the lawful heir. As those princes paid no regard to his holiness's bull, he excommunicated them, at three different times, in the year 1286, and laid the whole island of Sicily under an interdict. Honorius condemned and suppressed a new sect founded by Gerhard Sagarelli, who styled themselves "The Order of the Apostles," or "The Apostolic Brethren." But the objects apparently nearest the heart of Honorius were the extension of the papal power against all daring opponents, and the triumph of the crusaders over the infidels. His first attention was devoted to the former; and in subserviency to it, he had projected a design of uniting all the Christian princes

in a holy league against the two kings of Arragon and Sicily. While, however, he was wholly intent upon carrying it into execution, he was cut off by death, in 1287, when he had but just completed the second year of his pontificate. He is said to have been eminent for wisdom, temperance, and a sound discretion; and as a proof of his regard to the interests of learning, he made provision for the establishment of a college at Paris, for the study of the Oriental languages, though he did not live to see the completion of such an institution. He confirmed the order of the hermits of St. Augustine, and that of the Carmelites, which had been only tolerated by the second council of Lyons. Some of his letters are preserved. Moreri. Bower.

HONOUR, among the *Ancients*, was worshipped as a divinity, and had a temple erected to it, which had no entry but through the temple of Virtue; in order to teach men that true honour was only to be acquired by the practice of virtue. In conformity to this wise maxim, Virtue was sometimes painted with wings, because she procured honour and victory to those who studied her. Plutarch also observes to the same purpose, that they sacrificed to Honour with the head uncovered; it being usual to uncover upon meeting with those who by their virtues have acquired honour in the world; and we learn from Pliny, that Fab. Rutilianus was the first who made a law, that on the Ides of July the Roman knights should march on horseback from the temple of Honour to the capitol.

Honour is represented on many medals under the figure of a man holding a pike, and sometimes an olive branch, in the right hand, and a cornucopia in the other.

Beside its literal sense, wherein it denotes a testimony or token of esteem or submission, honour is particularly applied in our customs to the more noble kind of feignories, or lordships, whereof other inferior lordships or manors hold or depend. See SEIGNORY.

As a manor consists of several tenements, services, customs, &c. so an honour contains divers manors, knights-fees, &c. See MANOR.

It was also formerly called *beneficium*, or *royal fee*, being always held of the king in capite. Spelman.

Anciently honour signified the same as *baronia*.

HONOUR, *Counsellors of*, or *Honorary Counsellors*, are such as have a right to enter or sit in assemblies, courts, &c. to deliberate or give judgment in the same, though they do not regularly and properly belong to them.

The French call *chevaliers d'honneur*, knights or gentlemen of honour, the gentlemen ushers of queens and princesses, who attend them, give them their hand, &c. See USHER.

HONOUR, *Court of*. See COURT of Chivalry.

HONOUR *Courts* are held within the honours, or feignories, above-mentioned.

HONOUR, *Maid of*, are young ladies in the queen's household, whose office is to attend the queen when she goes abroad, &c. In England they are six in number, and their salary 300*l.* per annum each.

HONOUR, *Pages of*, are officers both of the king's and queen's household, under the master of the horse. Of the former there are four, whose annual salary is 26*l.* each; and of the latter two, with a salary of 15*l.* each.

HONOUR of a Peer. See PEER.

HONOURS of the *Louvre*, among the *French*, are certain privileges annexed to divers dignities, or offices, particularly those of duke, peer, chancellor, &c. as to enter the Louvre in a coach, to have the tabouret, or stool, in the queen's presence, &c.

HONOURS of the *Church* are the rights belonging to the

patron, &c. as a seat and sepulchre in the chancel, to be first served with the consecrated bread and wine, &c.

HONOURS of the *City* are the public offices or employments thereof. He who has been constable, overseer of the poor, and churchwarden of his parish; common-councilman, alderman, and lastly mayor; has passed all the honours of the city.

HONOURS of the *House* are certain ceremonies observed in receiving visits, making entertainments, &c. performed either by the master himself, or by some person appointed for that purpose; as to go and receive the guests, to conduct them out again, to see they be well seated, and, in short, to perform all the civilities and ceremonials of polite hospitality.

HONOURS are also applied to the principal part of the apparatus of great ceremonies; as coronations, consecrations, christenings, &c. Such are the oil, tapers, &c.

In obsequies they anciently represented the honours, that is, the shield, crest, sword, gantlets, spurs, banner, horse, &c.

HONOURS, *Funeral*, are the ceremonies performed at the interment of great men; as hangings, hearses, funeral harangues, &c.

HONOURS, *Military*. All armies salute crowned heads in the most respectful manner, colours and standards dropping and officers saluting. Their guards pay no compliment except to princes of the blood, and that by courtesy in the absence of crowned heads.

A field-marshal is to be saluted with the colours and standards of all the forces, except the horse and foot-guards, and excepting when any of the royal family shall be present; but in case a field-marshal is colonel of any regiment, or troop of horse, or foot guards, he is to be saluted by the colours or standards of the regiment or troop he commands.

Generals of cavalry and infantry, upon all occasions, are to have the march beat to them, and to be saluted by all officers, those bearing the colours excepted.

Lieutenant-generals of cavalry and infantry are, upon all occasions, to be saluted by all officers. They are to have three ruffles given them with presented arms.

Major-generals are to have two ruffles with presented arms.

Brigadier-generals are to have one ruffle with presented arms.

To colonels their own quarter-guards in camp turn out, and present their arms, once a day, after which they only turn out with ordered arms.

To majors their own guards turn out with ordered arms once a day; at other times they stand by their arms.

When a lieutenant-colonel or major commands a regiment, their own quarter-guards pay them the same compliment as is ordered for the colonel.

The master-general of the ordnance is to have the same respect and honours paid to him as the generals of horse and foot.

Honours to be paid by the Cavalry.—A general of cavalry or infantry is to be received with swords drawn, kettle-drums beating, trumpets sounding the march, and all the officers to salute, except the cornet bearing the standard.

A lieutenant-general is to be received with swords drawn, trumpets sounding twice the trumpet flourish, as in drawing swords, and all the officers to salute, except the cornet bearing the standard; but the kettle-drums are not to beat.

A major-general is to be received with swords drawn, one trumpet of each Squadron sounding once the trumpet flourish, as in drawing swords; no officer to salute, nor kettle-drum to beat.

A brigadier-general is to be received with swords drawn ; no trumpet to sound, nor any officer to salute, nor kettle-drum to beat.

All officers in the command of forts or garrisons, have a right to the complimentary honours from the troops under their command, which are due to the rank one degree higher than the one they actually possess.

Manner of paying honours.—The king's standard, or colour in the guards, is never to be carried by any guard, except that which mounts on his majesty's person.

The first standard, guidon, or colour of regiments, which is the union colour, is not carried by any guard, but that on the king, queen, prince of Wales, or commander in chief, being of the royal family ; and, except in those cases, it shall always remain with the regiment.

When general officers, or persons entitled to a salute, pass in the rear of a guard, the officer is only to make his men stand shouldered, and not to face his guard to the right about, or beat his drum.

All sentries are to pay a due respect to every officer who passes by their posts, but are to keep their proper front while paying the compliment.

All governors, whose commissions in the army are under the degree of general officers, shall have, in their own garrisons, all the guards turn out with rested arms, and beat one ruffe ; and though the main guard turns out with rested arms every time he passes, yet they give him the compliment of the drum but once a day ; but all the other guards beat as often as he appears near them.

If they are general officers likewise, they are then to have the further compliments paid them, by the several beatings of the drum, as practised in the army.

Regulation of honours to be paid to admirals.—Admirals, with their flags on the maintop, are to have the same respect from the troops as generals of cavalry and infantry ; that is, upon all occasions to have a march beat to them, and to be saluted by all the officers, those bearing the colours excepted.

Vice-admirals are to have the same respect as lieutenant-generals of cavalry and infantry ; that is, upon all occasions to be saluted by all the officers in the garrison, the drummers beating three ruffles.

The rear-admirals are to have the same respect as major-generals, who have two ruffles, and not to be saluted by any officer.

Commodores with broad pendants have the same respect as brigadier-generals ; which is to have one ruffe.

Rank and precedence between sea and land officers.—The admiral, or commander-in-chief of his majesty's fleet, is to rank with a field-marshal of the army.

The admirals with their flags on the main-top-mast-head, are to have rank with generals.

Vice-admirals are to have rank as lieutenant-generals.

Rear-admirals are to have rank as major-generals.

Commodores with broad pendants are to have rank as brigadier-generals.

Captains commanding post-ships, after three years from the date of their first commission for a post-ship, are to have rank as colonels.

All other captains commanding post-ships, are to have rank as lieutenant-colonels.

Captains of his majesty's ships or vessels, not taking post, are to have rank as majors.

Lieutenants of his majesty's ships are to have rank as captains.

The rank and precedence of sea-officers, in the classes

above-mentioned, are to take place according to the seniority of their respective commissions.

Post-captains commanding ships or vessels that do not give post, rank only as majors during their commanding such vessels.

No land-officer is to command any of his majesty's squadrons or ships, nor any sea-officer to command at land ; nor shall either have a right to demand military honours due to their respective ranks, unless they are upon actual service.

All guards and centinels are to pay the same compliments to the officers of the royal navy, as are directed to be paid to the officers of the army, according to their relative ranks.

The compliments above directed are to be paid by the troops, to officers in the service of any power in alliance with his majesty, according to their respective ranks.

Turning out of the line.—The line turns out without arms, whenever any part of the royal family, or the general commanding in chief, comes along the front of the camp.

When the line turns out, the private men are to be drawn up in a line with the colours and standards ; the corporals on the right and left of their respective companies, the picquet forms behind the colours, accoutred, but without arms.

The officers and non-commissioned officers are to be drawn up with their respective companies. The field-officers in their proper posts in battalion, two ensigns taking hold of the colours.

When the commander-in-chief comes along the line, the camp-colours on the flanks of the parade are to be struck, and planted opposite to the bells of arms, and the drums piled up behind the colours ; the halberts are to be planted between, and on each side of the bells of arms, the hatchets turned from the colours. James.

HONOUR Point, in *Heraldry*, is that next above the centre of the escutcheon, dividing the upper part into two equal portions. See POINT and ESCUTCHEON.

HONOUR, Abatements of. See ABATEMENT.

HONOUR, Additions of. (See ADDITIONS.) These additions are said to be nine in number ; *viz.* a border, a quarter, a canton, a gyron, a pile, a fiasque, a flanche, a voider, and an escutcheon of pretence. (See each term respectively.) When additions of honour have been granted, fashion alone seems to have guided the choice of the particular ordinary. In the reign of king Henry VIII., the pile had the preference ; and was granted by that king, as an augmentation of honour, to the lady Jane Seymour, and also to the lady Catharine Parr. But of late years, when the sovereign grants an augmentation to the arms of a subject, it hath been usual to place it either on a quarter, or on a canton. The estimation in which these ordinaries were anciently held, on account of their being occasionally granted as additions of honour, hath been considerably diminished, since it has been customary for any person of property, wanting and applying at the college for a coat of arms, not only to obtain a grant of arms, to him and his heirs, on paying the fees, but to have the figures of any of the additions of honour, in case he requests it, placed in the coat, although neither he nor any of his ancestors ever had any particular merit to intitle him to marks of the royal favour.

HONOURABLE AMENDS, Amende honorable. See AMENDE.

HONOURABLE, or Honourable ordinaries, in Heraldry. See ORDINARY.

HONOURARY, or HONORARY, is understood of a person who bears or possesses some quality or title, only for the name's sake, without doing any of the functions thereto belonging.

belonging, or receiving any of the advantages thereof. -See *Counsellors of HONOUR*.

In the College of Physicians, London, are honorary fellows. The Royal Academy of Sciences at Paris formerly consisted of four classes of members, viz. honorary, pensionary, associates, and adjuncts. See *ACADEMY*.

HONOURARY Feuds. See *FEUD* and *DESCENT*.

HONOURARY Games. See *GAMES*.

HONOURARY Services are those incident to the tenure of grand serjeantry, and commonly annexed to honours.

HONOURARY Tutor is a person of quality appointed to have an eye over the administration of the affairs of a minor, while the onerary tutors have the real effective management thereof.

HONOURARY, Honorarium, is also used substantively for a lawyer's fee, or a salary given to public professors of any art or science.

HONRUBIA, in *Geography*, a town of Spain, in New Castile; 10 miles N.W. of Alarcon.

HONSDORF, a town of Prussia, in the palatinate of Culm; 27 miles N.E. of Culm.

HONTAN, LA, Baron, in *Biography*, was born in Gascogne, and served in Canada, first as a soldier, then as an officer. From Canada, he was sent to Newfoundland as king's lieutenant, where he quarrelled with the governor, and was cashiered. He retired, first to Portugal, then to Denmark. As an author he is known by "*Voyages dans l'Amerique Septentrionale*," two volumes 12mo. in which we have an account of the different tribes inhabiting North America, their government, laws, customs, religion, &c.

HONTFONGENETHEF, a thief taken hond-habend, *i. e.* having the thing stolen in hand.

HONTHORST, GERARD, in *Biography*, was born at Utrecht in 1592, and was placed as a disciple with Abraham Bloemart: but when he quitted that master, he travelled to Rome, and proceeded so happily in his studies as to be accounted one of the best artists of his time. He continued at Rome for several years, being employed there by persons of the first rank, and particularly by prince Justiniani, for whom he performed many considerable works.

His particular excellence was shewn in his night-pieces, representing figures by candle-light, which usually were as large as life. Even Rubens professed himself an admirer of his paintings in that style; and Sandrart highly commends a picture of the Decollation of St. John by torch-light, which he saw at Rome, in the church of Madonna della Scala. He also mentions another in the Justiniani gallery, of which the subject is, Christ brought bound before Pilate, in a white robe; and in that composition, the light proceeding from the flambeau and torches produced so uncommon a lustre, and so bold an effect, that no preceding artist had performed any thing in that style that could be compared with it. Sandrart also observes, that Honthorst was as much distinguished, while he resided at Rome, for his night-pieces in large, as Elsheimer was for his manner of designing the same subjects in small.

Soon after his returning to his own country he visited London, and obtained the favour of king Charles I. by several grand performances and portraits; especially by one allegorical picture, in which he represented the portraits of the king and queen, in the characters of two deities, and the portrait of the duke of Buckingham in the character of Mercury, introducing the liberal arts to that monarch and his consort. For that composition, which was well drawn and extremely well coloured, the king presented him with three thousand florins, a service of plate for twelve persons, and a beautiful horse; and he had afterwards the honour to

instruct the queen of Bohemia, and the princesses her children, in drawing.

His pencil is free and firm, and his colouring hath a great deal of force, although it often is not pleasing, by a predominancy of the yellow and brown tints; yet undoubtedly Honthorst would have been an excellent painter, if he had known how to give more grace, and more correctness to his figures.

At his return from London to Holland, he adorned the pleasure houses of the prince of Orange with many poetical subjects, which he executed in fresco as well as in oil; but he principally was employed in painting portraits, which are described as having good expression, and extraordinary life and force, by their broad masses of light being contracted by strong shadows. He died in 1660, aged 68.

HONTHORST, WILLIAM, brother to the preceding, was born at Utrecht in 1604, and learned the art of painting from Abraham Bloemart. The portraits which he painted were very much esteemed, and in reality those were his most commendable performances; for the historical subjects of his hand, which generally were painted in a large size, are in no degree equal to those of Gerard, either in respect of the composition, the handling, or the colour, although they are frequently sold for the works of that master. He died in 1683, aged 79.

HONTHY, or HONDDY, in *Geography*, a river of South Wales, which runs into the Uls, at Brecknock.

HONTORIA de Valdecarados, a town of Spain, in Old Castile; 22 miles W. of Osma.

HOOBARREE, a town of Africa, in the country of Sahara; 320 miles S.W. of Moorzouk. N. lat. 27° 12'. E. long. 9° 25'.

HOOD. See *CHAPERON* and *CUCULUS*.

HOOD, in *Falconry*, is a piece of leather, wherewith the head of a hawk, falcon, or the like, is covered.

After sealing or sewing up the eyelids of a young hawk, she is to be fitted with a large easy hood, which is to be taken off and put on very often, watching her two nights, and handling her frequently and gently about the head. When you perceive she has no aversion to the hood, unseal her in the evening by candle-light, continuing to handle, hood, and unhood her, as before, till at last she takes no offence, but will patiently endure handling.

After unsealing, anoint with the finger and spittle the place where the sealing thread is drawn through; then hood her, and hold her on your fist.

As soon as she is well reclaimed, let her sit upon a perch; but every night keep her on the fist three or four hours, stroking, hooding, and unhooding, &c. And thus you may do in the day time, when she hath learnt to feed eagerly and without fear.

Hood, on *Ship-board*, is a copper frame, made to go on the top of the chimney, and to shift as the wind does, that the smoke may always fly to leeward.

Hood is also a sort of low wooden porch, placed over the stair-case or ladder, which leads into the steerage or apartments, where the crew generally reside in a merchant-ship. The use of the hood is to admit air and light, and at the same time to prevent the rain from falling into the steerage. The wooden porch over the entrance or stair-case of the master's cabin is called *companion*.

Hood's Bay, in *Geography*, a harbour on the W. coast of Admiralty island, in Chatham strait. N. lat. 57° 26'. E. long. 225° 36'.

Hood's Island, an island in the Southern Pacific ocean, the most northerly of the five Marquesas islands, discovered by captain Cook in April 1774, and so called after the name

of the young gentleman by whom it was first seen; about 48 miles in circumference. It is called by the natives Tebooa. S. lat. 9° 26'. W. long. 138° 52'. See MARQUESAS.

HOODS, in *Rural Economy*, the names of the sheaves which head or cover the shocks or stouks of corn.

Hood Sheaves, another term employed to signify the same.

HOODED Milfoil, in *Botany*. See UTRICULARIA.

HOODED Willow-herb. See SCUTELLARIA.

HOODERS, a term given to the hood sheaves of corn hattocks in many districts.

HOOF, UNGULA, the horny part which covers the feet of divers animals, as horses, bullocks, &c.

The hoof serves much the same purposes as the nails of some animals and the claws of others.

The hoof of a horse surrounds the sole and the coffin-bone. To be good, it should be of a dark colour, somewhat shining, high, smooth, of a round shape, but a little larger below than above; short, that the horse may tread more on the toe than on the heel; and somewhat hollow within, having a narrow frush and broad heels.

The hoof should not have circles, which are a sign of its being brittle, and that the horse, being often shod, has had his feet spoiled by the many pieces broke out of it. A white hoof also is commonly brittle.

To judge whether the hoof be good and stanch, lift up the foot, and consider if it have a shoe forged purposely for it, and be very much pierced, and the holes made in the unusual parts, as wanting horn enough to take hold by in those places where the nails are commonly driven. Sometimes they are forced to pierce the shoes nigh the heels, because the fore-part is bad; it being unusual to drive the nails near the heels, except the toe be so much split and broke as not to bear nails.

If the hoof be not round, but broad, and spreading out at the sides and quarters, the horse commonly has narrow heels, and, in time, will be flat-footed; which sort of foot is weak, and will not carry a shoe, nor travel far, but furbate; add, that treading more on his heels than his toes, will cause him to go low on his pasterns.

If the hoof be long, it will make him tread altogether on his heels. If crooked, *viz.* broad without and narrow within, so that the horse is splay-footed, it will cause him to tread too much inward, and cut or interfere. If the frush be broad, the heels will be weak and soft. If the heel be narrow and tender, the horse will in time grow hoof-bound.

This sort of horny material, when ground or broken down in proper mills, has been found an extremely salting manure, and capable of affording large crops. See MANURE.

HOOF, *Bony*, is a round bony swelling, growing on the top of a horse's hoof, which is always caused by some blow or bruise. This is first to be ripened and brought to supuration by digesting it with rotten litter, or hay boiled in stale urine, or with a plaster of stale wine- lees and wheat-flour boiled together. When it is come to a head, let it be lanced with a thin hot iron, and put a tent into it made of turpentine, deer's fat, and wax, boiled together in equal quantities, and lay a plaster of the same over the tent.

HOOF, *Brittle*, the name of an infirmity to which horses are subject. It comes sometimes naturally, and sometimes artificially. When it comes naturally, it is generally hereditary, the sire or dam having had the same complaint. When it comes on accidentally, it is sometimes owing to a distemper falling down into the feet; sometimes to the creature's being much foundered.

The hoof, in this distemper, is so friable and rotten, as it were, that it cracks and flakes off on every slight occasion. The cure is to be attempted in this manner: take wax, turpentine, suet, and hog's lard, of each four ounces; fallad oil, a quarter of a pint by measure; and of dog's greafe, half a pound; let the whole be melted together, and strained through a piece of canvas into a gallypot. The hoof is to be thoroughly anointed with this every day, morning and evening, especially at the root; and if there are any large cracks, they must be filled up at every dressing with a mixture of equal parts of cow-dung and hog's lard.

The other infirmities to which hoofs are liable, are, the casting of the hoof, hoof-bound, hoof-hard, hoof-hurt, loose hoof, false quarters, &c.

HOOF, *Casting of the*. A horse is said to *cast his hoof* when the whole coffin of the hoof becomes loosened, and falls off from the bone. This may be remedied by care, and proper application; a new hoof being procurable, if the coffin bone, &c. be not hurt.

Horses sometimes cast their hoofs, by reason of some prick, stub, foundering, furbating, or other accident, that causes an impostumation in the foot; so that the hoof, and sometimes the coffin bone, being spongy and easily broken, fall off in large pieces. The last, when it happens, is a desperate case.

HOOF-bound, is a shrinking in of a horse's hoof on the top and the heel, which makes the skin stare above the hoof, and grow over the same.

It befalls a horse divers ways, either by keeping him too dry in the stable, by straight shoeing, or by some unnatural heat after foundering.

HOOF-hurt. In labouring beasts, especially oxen, if the hoof be hurt with a coulter or share, it may be cured by a salve of pitch and greafe mixed with powder of brimstone, dissolved together, and with a hot iron melted in the cleft of the hoof.

HOOF-loosened, is a dissolution or dividing of the horn or coffin of a horse's hoof from the flesh, at the setting on of the coronet.

If the parting be round about the coronet, it comes by means of foundering; if in part, then by a prick of some channel nail, quitter-bone, retreat, graveling, cloying, or the like. The signs of being loosened by foundering, is its breaking first in the fore part of the coronet, right against the toes; because the humour always descends towards the toe. If it proceeds from pricking, graveling, or the like, the hoof will loosen round about equally even at first. If occasioned by a quitter-bone, or hurt on the coronet, it will break right above the grieved part, and rarely be seen to go any farther.

HOOF-swelled, is an infirmity that sometimes befalls young horses, when they are over-rid or wrought hard, which makes them swell in that part, because of the blood falling down and settling there; which, if not speedily removed, will usually beget a wet spavin.

For the cure, take the strongest aquafortis, and first file or draw away the old hoof to a considerable degree with a file or drawing iron; then touch what is left of the hoof for three or four dressings with the aquafortis; anoint the foot with an ointment made of one pound of hog's greafe, three quarters of a pound of patch greafe, five ounces of Venice turpentine, three ounces of new wax, and three ounces of fallad oil, melted together over the fire; and thus a new hoof will be made to grow on the foot.

HOORS, in *Comparative Anatomy*, are the hard and insensible

sensible envelopes of the last phalanges of the toes in certain quadrupeds. They differ from nails in their form, being blunt, and broader at their termination than any other part, and being continued under the base of the phalanx and for some way behind. A hoof, when removed from the foot, has commonly the appearance of an irregular hollow pyramid; the anterior and lateral portions of the hoof are analogous in composition and mode of growth to the nails or claws. They are made of hard dense compact horn, grow chiefly from the upper edge, which corresponds to the root of the nail, and are moulded by fine thin laminae, which run downwards in the direction of the feet. These laminae are extremely numerous, and are very remarkable in the feet of the large quadrupeds, as the elephant, rhinoceros, &c.; are plain and distinct in the horse, but are less marked in the ruminant or cloven-footed quadrupeds. The structure of the laminae is membranous, or rather membrano-ligamentous; they are supplied with numerous blood-vessels and nerves, but appear to be rather less vascular and sensible, than the soft parts within the sole or inferior portion of the hoof. The sensible laminae are inserted between corresponding horny laminae, situated upon the internal surface of the anterior and lateral portions of the hoof, by which the surface of connection between the hoof and the foot is vastly extended: indeed, the union is so strong between these parts; that the whole weight of the large quadrupeds may be entirely sustained by it, as is proved by the operation of removing the horny sole of the foot in horses, and likewise by the sole descending when the adhesion of the laminae is destroyed. See *Veterinary ANATOMY and FOOT*.

The inferior and posterior portion of the hoof is composed of a horny substance, but of a texture less firm and tough than the anterior and lateral parts. The surface by which it is produced is not in general laminated, but covered with villous processes. These are extremely vascular and sensible, and are analogous in situation and office to the villi of the cutis covering the extremities of the fingers and toes of the human subject, and of the digitated quadrupeds. It appears to be chiefly on the sensible sole of the foot in hoofed quadrupeds that impressions of touch are made, and although the extremities of these animals are incapable of surrounding small objects, and therefore cannot convey sensations of the figure or extent of foreign bodies, they are most admirably constructed to give the animal notice of the mere presence or the degree of resistance of external objects. The surface within the hoof is so acutely sensible, that slight impressions are felt by it, while, at the same time, by the interposition of a strong elastic substance, it is defended from the pain or injury that would ensue from more considerable impulse. Another use of the hoof is to protect the feet from the pressure and friction sustained in the exercise of walking or in standing. This is particularly necessary in the large quadrupeds, whose weight and almost constant erect position would otherwise bruise and wear their feet: the hoofs, therefore, may be considered as a sort of natural shoes, having the additional property of a continual growth to repair their waste. The process of reparation, however, is only in a proportion suited to the natural habits, situation, and mode of life of the animal, and hence the necessity of shoeing some quadrupeds, and of cutting away exuberances from the hoofs in others. See articles *ANATOMY of the Horse*, and *SHOEING*.

In several quadrupeds there are hoofs formed which never touch the ground; these grow upon the extremities of the imperfect toes, or those which do not enter into the composition of the foot of the animal, and furnish a striking example of the uniformity of nature, even where it cannot answer any purpose.

HOOGE, PETER DE, in *Biography*, was born about the year 1643, but neither his native city, nor the master of this painter, are ascertained by any of the writers on this subject; but by his manner of painting, Descamps accounts him to have been one of the best disciples of Berchem. However, he seemed to admire and imitate the manner of Mieris, Metz, and Slingeland, although, in the finishing of his pictures he did not arrive at the perfection of those great artists.

The heads and hands of his figures have sometimes a degree of force scarcely unworthy of being compared to Vandyke; but his touch is more broad and free than either Metz or Mieris, and he falls far short of their exquisite neatness. His pencil is light and firm; his design correct and in a good taste, as if he had been instructed in some celebrated school. His usual subjects are conversations, in which the draperies of his figures are taken from the modes of the times; and as to his colouring, it is extremely good, natural, and strong.

HOOGEVEEN, HENRY, a celebrated Dutch philologist, was born of parents in humble life at Leyden in 1712. He was sent to school at 10 years of age, when the severity of the master seemed to extinguish all his capacity for learning; but under a second tutor his powers expanded so rapidly, that at the age of 15 he was able to relieve his father from part of the expence of his education, by commencing a teacher of the lower classes. He after this followed the business of a schoolmaster at different places, and at Delft he ended his days in 1794. The works of this grammarian are, 1. An edition of "Vigerus de Idiomaticis Linguae Graecae," which has been frequently reprinted, the addition by Hoogveen being reckoned very valuable: 2. Poems, Orations, and other occasional Pieces: 3. "Doctrina Particularum Linguae Graecae," in two volumes 4to. 1769. This procured the author a very high reputation among all the votaries of Greek learning throughout Europe. An abridgment of it has been made by Schütz. Since the death of Hoogveen a posthumous work has been given to the world, entitled, "Dictionarium Analogicum Graecum." It was printed at the university press of Cambridge. Gen. Biog.

HOOGLIDE, in *Geography*, a town of France, in the department of the Lys, and chief place of a canton, in the district of Ypres. The place contains 3529, and the canton 13,258 inhabitants, on a territory of 105 kilometres, in five communes.

HOOGLY, a circar or province of Bengal, about 80 miles in length from N. to S. and 48 in its medial breadth, much intersected, and formed into numerous islands by branches of the Hoogly and several other rivers—Also, a small but ancient city of Bengal, on the same river with Calcutta, but on the opposite side, and about 26 miles above it. In the time of the Mahometan government, it was the "bunder" or port of the western arm of the Ganges, where the customs or duties on merchandise were collected. The French, Dutch, Danes, and Portuguese, have each of them had a town and factory on this part of the river, between Hoogly and Calcutta; and all within the extent of ten miles along the river. In 1757 this town was taken by the British, and vast quantities of salt and provisions belonging to the nabob of Bengal burned and destroyed. N. lat. 25 54'. E. long. 88° 29'.—Also, a river of Bengal, formed by the junction of the Cossimbuzar and Jellinghy, the two westernmost branches of the Ganges, which runs into Bengal bay. This is the port of Calcutta, and the only branch of the Ganges that is commonly navigated by ships. The Cossimbuzar river is almost dry from October to May; and the Jellinghy river, (although a stream runs in it the whole year,) is in some

some years unnavigable during two or three of the driest months; so that the only subordinate branch of the Ganges, that is at all times navigable, is the Chundnah river, which separates at Moddapour, and terminates in the Hooringotta. The Hoogly river, which is the most westerly branch of the Ganges, has a much deeper outlet into the sea than the principal branch. This may probably be owing to its precipitating a less quantity of mud than the other; the quantity of the Ganges water discharged here being less than in the other, in the proportion of one to six. From the difficulties that occur in navigating the entrance of the Hoogly river, many are led to suppose that the channels are shallow. The difficulties, however, arise from bringing the ships across some of the sand-banks, which project so far into the sea, that the channels between them cannot easily be traced from without. Rennell's Mem.

HOOGSTRATEM, a town of France, in the department of the Two Nethes, and chief place of a canton, in the district of Turnhout; 15 miles N. of Herentals. The place contains 1360, and the canton 7227 inhabitants, on a territory of 202½ kilometres, in eight communes.

HOOK, in *Angling*, &c. See **FISHING-hook**.

HOOKS, in *Building*, &c. are of various sorts; some of iron and others of brass, viz. 1. Armour-hooks, which are generally of brass, and are to lay up arms upon; as guns, muskets, half-pikes, pikes, javelins, &c. 2. Casement-hooks. 3. Chimney-hooks, which are made both of brass and iron, and of different fashions; their use is to set the tongs and fire-shovel against. 4. Curtain-hooks. 5. Hooks for doors, gates, &c. 6. Double line-hooks, large and small. 7. Single line-hooks, large and small. 8. Tenter-hooks, of various sorts. See **TENTER**.

HOOKS of a Ship, are all those forked timbers which are placed directly upon the keel, as well in her run as in her rake. See **BREAST-hooks**.

HOOK, Boat, in a *Ship*. See **BOAT**.

HOOKS, Can, those which being made fast to the end of a rope, with a noose (like that which brewers use to sling or carry their barrels on), are made use of for slings. See **CAN-hook**.

HOOKS, Foot, in a *Ship*, the same with futtocks.

HOOK-land, or *Ope-land*, land ploughed and sowed every year. Dict. Rust.

HOOKS, Loof, in a *Ship*, a tackle with two hooks; one to hitch into a cringle of the main or fore-sail, in the bolt-rope at the leech of the sail by the clew; and the other is to hitch into a strap, which is spliced to the chefs-tree.

Their use is to pull down the sail, and succour the tackles in a large sail and stiff gale, that all stress may not bear upon the tack. It is also used when the tack is to be seized more secure, and to take off or put on a bonnet or drabler.

HOOK-pins, in *Architecture*, are taper iron pins, only with a hook-head, to pin the frame of a roof or floor together.

HOOKS, Sheer, in a *Ship*, hooks like sickles fixed in the ends of the yard-arms, that if a ship under sail come to board her, those sheers may cut her shrouds, and so spoil her tackling. But as those sheer-hooks are subject to break their own yards, and cut the ropes that come from the top-sails, they are now very seldom used.

HOOKS, Trill. See **TRILL-hooks**.

HOOKS, Draught. See **DRAUGHT-hooks**.

HOOKAH, a pipe for smoking, used in India and among the nations of the East; consisting of a glass-vessel of a globular form, nearly filled with water, from which issue two tubes, one perpendicular, on which the tobacco is placed, and the other oblique from the side of the vessel, to

which the mouth is applied. The advantage of this construction is, that the smoke, in passing through the water, is cooled and rendered more agreeable. In company this instrument is circulated from one to the other, but among persons of superior rank and refinement, each person has a hookah appropriate to himself, which is often made of silver and set with precious stones; the tube, which is applied to the mouth, is long and pliant, and on this account denominated the snake; and the vessel through which the smoke passes is filled with rose water, and thus receives some of the fragrant quality of that fluid. The preparation of the hookah is the peculiar province of one of the domestics, and the use of it is reckoned among the luxuries of the East.

HOOKE, NATHANIEL, in *Biography*, author of a Roman history, was a Roman Catholic by profession, and much attached to the mystical doctrines taught by Fenelon. Few biographical facts are known relating to this person. He is said to have enjoyed the confidence and patronage of persons distinguished as well by their virtue as their rank. He appears to have lost the property which he possessed in the fatal South-sea bubble. Not long after, he was recommended to Sarah, duchess of Marlborough, as a proper person to assist in compiling the memoirs of her own life, for which literary service she presented him with the magnificent sum of five thousand pounds. The book, entitled "An Account of the Conduct of the Duchess of Marlborough, from her first coming to Court to the Year 1710," was published in 1742, but she quarrelled with Hooke soon after, on account, as she affirmed, of his wish to convert her to popery. The great work of Mr. Hooke was "The Roman History," from its earliest periods to the settlement of the empire under Octavius. It was published at first in 4 vols. 4to., but it has since been published in 8vo., and a new edition of it was given to the world a few weeks since in 11 vols. 8vo. Another work of this historian upon Roman affairs, was "Observations on Four Pieces upon the Roman Senate." He also published a translation of "Ramsley's Travels of Cyrus." Gen. Biog.

HOOKE, ROBERT, an eminent mathematician, who flourished in the 17th century, was born at Freshwater, in the Isle of Wight, where his father was minister, in the year 1635. The brightness of his parts led his parents to intend him for the church, but the weak state of health of the child, and his being subject to almost perpetual head-ache, made them despair of rendering their son a scholar. The youth being, in a good measure, left to himself, and to the bent of his own genius, turned his attention to mechanics, and employed himself in making toys, some of which discovered much ingenuity. At length he made a clock in wood, that would perform all the motions, and mark out in a rough manner the hours of the day. He displayed a taste likewise for drawing, and soon after the death of his father he was placed under the celebrated painter sir Peter Lely. To the profession of painting he could not apply himself on account of his health. He therefore was placed first in Westminster school, and afterwards was sent to Oxford. In 1655 he had made such progress in the sciences, that he was elected a member of a philosophical society at Oxford, and became an assistant to the honourable Mr. Boyle, in his experiments and pursuits, to whom he was particularly useful in the construction of the air-pump. He was, likewise, an adept in astronomy, and constructed some instruments well adapted to the making of observations. In 1662, Mr. Hooke was appointed curator of experiments for the Royal Society, which met at that period at Gresham college; he engaged to furnish the members, at every time of their meeting, with two or three new experiments of his own, and to pursue

pursue such others as they should recommend to him. This business led him to make several important discoveries relating to the nature and properties of the air. In 1663, when the Royal Society was established by charter, Mr. Hooke was nominated one of the members who were appointed on the first council. The repository of the society was committed to his care, and a gallery in the Gresham college was appointed for its reception. In the following year he was made professor of mechanics to the Royal Society, by sir John Cutler, with a salary of 50*l.* per annum settled upon him for life, and in the same year he read astronomical lectures at Gresham college. He published, in 1665, his "Micrographia, or some physiological Descriptions of minute Bodies, made by magnifying Glasses, &c." This work he dedicated to the king, who had been instrumental in founding the society, and who had shewn himself friendly to experimental pursuits, for all which he is applauded by Mr. Hooke in terms approaching to fullsome flattery. The meetings of the society being now discontinued on account of the ravages of the plague, Mr. Hooke, accompanied by other persons, among whom was doctor, afterwards bishop, Wilkins, and sir W. Petty, retired to the seat of the earl of Berkeley, where they diligently pursued their experiments, an account of which they afterwards communicated to the Royal Society when its meetings were resumed. After the fire of London in 1666, Mr. Hooke offered to the court of aldermen a plan for re-building the city, which, though not followed, led to his appointment to the office of one of the city surveyors, in which he acquired considerable property. We shall not enter into the disputes and controversies in which Mr. Hooke engaged, in some of which he shewed a temper unworthy of a true philosopher. In 1673 he proposed a "Theory of the Variation of the Compaſs," and in the following year he published "An Attempt to prove the Motion of the Earth from Observations;" his next publications were "A Description of Helioscopes, &c." and "Descriptions of some mechanical Improvements of Lamps and Water-works, together with physical and mechanical Discoveries." Upon the death of Mr. Oldenburgh, Mr. Hooke was appointed to supply his place in the office of secretary to the Royal Society; this was only a temporary appointment, as the office was in a few months given to Mr. Nehemiah Grew. Mr. Hooke was not contented with the reputation which he had acquired, though considerable, but on the publication of sir Isaac Newton's Principia, he laid claim to that great man's discovery concerning the force and action of gravity, his pretensions to which were most satisfactorily refuted. In 1691 he was employed in forming the plan of the hospital near Hoxton, which was founded by alderman Aike, who appointed archbishop Tillotson one of his executors, and in the same year Mr. Hooke was by that prelate created M. D. In 1696 the Royal Society would gladly have employed him in a repetition of his experiments at their expence, but his ill state of health prevented him from engaging in the business. He died at his apartments in Gresham college in 1702, in the sixty-eighth year of his age. Several of his papers may be seen in the Transactions of the Royal Society; and after his death, in 1705, his posthumous works were published. He was a man of great mechanical genius, and the sciences are indebted to him for several improvements, and for instruments adapted to the discovery of other new and useful facts. He was well acquainted with the ancient languages, and all the branches of the mathematics. He always maintained a great veneration for the Deity, and seldom received any signal benefit in life, or made any valuable discovery in nature, or invented any useful contrivance, or found out any

considerable problem, without expressing his gratitude to Divine Providence. Biog. Brit.

HOOKER, JOHN, a learned antiquary, was born at Exeter in 1524, and educated at Oxford, after which he travelled into Germany. Upon his return he was elected a representative in parliament for his native city in 1572. He wrote a description of Exeter, and was author of some part of Holingshed's Chronicle, besides other pieces. He died in 1601.

HOOKER, RICHARD, nephew of the above, was born at Heavitree, near Exeter, in 1553; he was educated at the grammar school of Exeter, from which place he was sent to Corpus Christi college, Oxford, of which he was chosen fellow in 1577. He was indebted to the patronage of bishop Jewel for a learned education, and calling once on the prelate in his way to Oxford, the bishop gave him much good advice and his benediction, but forgot to give him any money; quickly, however, recollecting himself, he sent his servant to call him back, and on his return he said, "Richard, I have sent for you to lend you a horse, which hath carried me many a mile, and I thank God with much ease." He then gave him a walking staff, with which he had himself travelled through many parts of Germany, and added, "Richard, I do not give but lend you my horse; be sure you be honest and bring my horse back to me at your return from Oxford. I do now give you ten groats to bear your charges to Exeter (whither he was going to see his mother), and here are ten groats more, which I charge you to deliver to your mother, and tell her I send a bishop's benediction with it, and beg the continuance of her prayers for me. And if you bring my horse back to me, I will give you ten groats more to carry you on foot to the college, and so God bless you Richard." Shortly after this, young Hooker lost his patron by the death of the good bishop; he had, however, those talents and that excellent disposition which soon procured him other friends in Dr. Cole, then president in his college, and Dr. Edwin Sandys, bishop of London, by whose interest he was elected scholar of his college in 1573. At the same moment almost, the bishop placed his own son under the care of Mr. Hooker for college instruction, though he had not at that time attained to his twentieth year, but said Dr. Sandys, "I will have for my son a tutor that may teach him learning by instruction, and virtue by example, and my greatest care shall be the last." Mr. Hooker, while at college, was greatly distinguished among his contemporaries, for the piety, regularity, and exemplariness of his life. In 1577 he took his degree of M. A., and was in the same year elected fellow of his college. In 1579 he was appointed deputy-professor of the Hebrew tongue in the university, and for a cause, not known, but which was probably of a very trifling nature, he and some others were expelled the college by the vice-president, to which they were again restored in the course of two or three weeks. Mr. Hooker took orders in 1581, and very shortly after was appointed to preach at St. Paul's Cross in London. This appointment, which was esteemed an high honour, produced a train of circumstances, by which the young divine was, through the great simplicity of his character, entrapped into an unfortunate marriage with a woman who brought him neither beauty nor portion, and who has been represented as "a silly clownish woman, and withal a mere Xantippe." In consequence of this step Mr. Hooker lost his fellowship, and was obliged to quit the university before he had obtained any preferment. In 1584 he was presented to the rectory of Drayton-Beauchamp, in Buckinghamshire, where he lived a miserable life with his spouse. Here he was visited by his friend and pupil Mr. Sandys in company with

with another pupil, Mr. Cranmer, a grand-nephew of the celebrated archbishop. The young man found their respected and very learned tutor tending a small flock of sheep, during the absence of his servant, called away to perform some domestic employment. When he was released from this duty, his friends accompanied him to the house, where they had the more serious mortification of witnessing the churlishness of a wife, who took every opportunity of rendering one of the best of men wretched by her caprice and vexatious manners. They felt for the situation of their friend, and Mr. Cranmer, before he left the house, expressed his surprize that he could possibly endure the miseries and insults to which he was subjected; to this Mr. Hooker replied, "My dear George, if saints have usually a double share in the miseries of this life, I that am none, ought not to repine at what my wife Creator hath appointed for me, but labour (as indeed I do) to submit mine to his will and possess my soul in peace." Upon the return of Mr. Sandys, he prevailed on his father to obtain some better situation for Mr. Hooker, and he was, accordingly, by his interest, made master of the Temple. He soon found that London was not adapted to his mind; he loved a rural retirement, in order, as he said, "that he might see God's blessings spring out of the earth, and be free from noise and bustle, and eat that bread, which he might call his own, in privacy and quietness." He was, therefore, desirous of exchanging his preferment for a more retired and tranquil scene, and the more so, as he had begun and had made some progress in his celebrated work "Of the Laws of Ecclesiastical Polity," which he found himself incapable of carrying on to his own satisfaction in the Temple. Upon making known his wishes to archbishop Whitgift, and apprising him of the undertaking on which he was employed, Mr. Hooker was presented, in 1591, to the rectory of Bosecomb, in Wiltshire; and in the same year he had other valuable preferments in the cathedral of Salisbury. At Bosecomb he finished four books of his great work, which were printed in 1594, and in the following year he was presented by the queen to the rectory of Bishop's Bourne, in Kent, where he resided the remainder of his life, discharging the duties of his office in the most exemplary and conscientious manner. Here he finished his work, but he did not live to publish the sixth, seventh, and eighth books. Of this very valuable piece pope Clement VIII. said, "that there were in it such seeds of eternity as will continue till the last fire shall devour all learning." In the year 1600, Mr. Hooker, in consequence of a cold that he caught on a passage by water between London and Gravesend, was afflicted with a long and very severe illness, which, in the end, proved fatal to him. He died in November of the same year, when he was only in the forty-seventh year of his age. His treatise on "Ecclesiastical Polity," procured for him a very great and extensive reputation both at home and abroad. When king James I. came out of Scotland, on his accession to the throne of England, he enquired of archbishop Whitgift for his friend Mr. Hooker, and being answered that he had died before the queen, who received the news of his death with great regret, he replied, "And I desire it with no less, as I shall want the desired happiness of being and discoursing with that man from whose books of church polity I have received such satisfaction. Indeed, my lord, I have received more satisfaction in reading a leaf or paragraph in Mr. Hooker, though it were but about the fashion of churches, or church-music, or the like, but especially of the sacraments, than I have had in the reading particular large treatises but of one of those subjects by others, though very learned men; and though many others write well, yet in the next age they will be forgotten; but,

doubtless, there is in every page of Mr. Hooker's book the picture of a divine soul, such pictures of truth and reason, and drawn in so sacred colours, that they shall never fade, but give an immortal memory to the author." This work, so highly applauded by a pope, and a king, who considered himself much wiser and more learned in theology than all the popes, contains the most profound and ablest defence of ecclesiastical establishments that has ever appeared. Biog. Brit. Toulmin's Neal.

HOOKER is the name of a vessel built like a pink, but rigged and masted like a boy; much used by the Dutch.

HOOKERIA, in *Botany*, so called by Dr. Smith, in honour of his friend Mr. William Jackson Hooker, F. L. S. a most assiduous and intelligent-botanist, celebrated as the discoverer of the *Buxbaumia aphylla* in England, and particularly skilled in the knowledge of cryptogamic plants, especially *Jungermannia*, with the reticulated habit of which that of the *Hookeria* accords. The interesting journal of a tour to Iceland, which Mr. Hooker has lately printed for the use of his friends, gives a foretaste of what the world may expect from his labours in a more promising and more extensive undertaking. Sm. Tr. of Linn. Soc. v. 9. 275.—Class and order, *Cryptogamia Musci*. Nat. Ord. *Musci*.

Ess. Ch. Capsule ovate, with dot-like reticulations, from a lateral scaly sheath. Outer fringe of sixteen teeth; inner a sixteen-toothed membrane. Veil reticulated and cellular, undivided.

Ten species are described in the Linnæan Transactions, four of which, not previously figured, are there engraved. The only British one is

H. lucens. Engl. Bot. t. 1902. (*Hypnum lucens*; Linn. Sp. Pl. 1589. Sm. Fl. Brit. 1295. Hedw. Fund. v. 1. 13. t. 1. f. 4—6. *H. pennatum aquaticum lucens*, longis latiuscule foliis; Dill. Musc. 270. t. 34. f. 10.)—Leaves three-ranked, elliptical, uniform, entire, without ribs.—Found in moist shady situations, in various parts of England, especially in the northern counties, as well as in Germany and North America. Mr. Hooker gathered it on Holt heath, Norfolk, in wet places among grass, bearing fruit in February. This is one of the most elegant of mosses, distinguished by its broad, pellucid, finely reticulated, succulent, pale green leaves, which stand upright, apparently in two rows, but mostly disposed in three; they sometimes take root at their blunt points. *Sheaths* lateral, solitary or in pairs, of several ovate, pointed, ribbleless scales. *Fruit-stalks* solitary, erect, five times the length of the leaves, rather stout, deep red and shining, bulbous at the base. *Capsule* more or less drooping, ovate, short, dark brown, shining, all over most beautifully and regularly marked with dot-like reticulations, which by a mistake in the engraver of English Botany (for the drawing was correct), are represented like furrows only. Every other part of that plate, however, is correct. The singularly cellular white veil, which falls off entire, without splitting, is perhaps as good a mark of the genus as any. The lid is conical, as long as the capsule.

Among the exotic species the most remarkable for its history is

H. pennata. (*Loisea pennata*; Labillard. Nov. Holl. v. 2. 106. t. 253. f. 1. *Anidantium bulbosum*; Hedw. Sp. Musc. 43. t. 6. f. 1—5.)—Leaves three-ranked, somewhat pointed, finely serrated; the intermediate row orbicular, half the length of the rest, which are lanceolate, and longer than the fruit-stalks.—Gathered by M. Labillardière, and Mr. R. Brown, in New Holland; at Dusky bay, New Zealand, by M. A. Menzies.—Larger than the foregoing, with creeping, densely tufted, black roots. Hedwig mistook them for bulbous ones, and seeing only half-ripe cap-

fules, did not detect the fringe, which caused him to refer this moss to his *Aniëangium*. Mr. Brown found its *vil* to agree with that of *H. lucens*, which confirms the character of the genus. The simple fern-like form of the stem and flat leaves is peculiarly elegant. The height of the plant is from three to five inches.

The eight remaining species of *Hoskeria* are *quadrisaria*, Tr. of Lin. Soc. v. 9. t. 23. f. 1.; *filiculiformis*, Hedw. Sp. Musc. t. 50; *tamarisfeina*, *ibid.* t. 51. f. 1—7; *retulata*, *ibid.* f. 8—13; *flabellata*, Tr. of Lin. Soc. v. 9. t. 23. f. 2; *Arbuscula*, *ibid.* f. 3; *flexilis*, Hedw. Sp. Musc. t. 58; and *uncinata*, Tr. of Lin. Soc. v. 9. t. 23. f. 4.

HOOKETOWER, in *Geography*, a cape on the south of Ireland, at the extremity of a tongue of land in the county of Wexford, which forms the eastern side of Waterford harbour. On this cape is a light house. N. lat. 52° 6'. W. long. 6° 58'.

HOOLA, a town of Norway, in the diocese of Aggerhuus; 32 miles N.W. of Christiania.

HOOLDEAH, a town of Bengal; 21 miles S. of Calcutta.

HOOLE, CHARLES, in *Biography*, who flourished in the 17th century, was born at Wakefield, in Yorkshire, and educated at Lincoln college, Oxford, after which he became master of the free-school at Rotheram; but at the beginning of the civil wars he removed to London, where he gained great reputation as a school-master. He was author of many useful school books, an excellent edition of the Greek Testament, and a translation of Terence's plays. He died in the year 1666.

HOOLE, JOHN, a very ingenious man, was born in London in 1727. His father was a watch-maker, and a very able mechanic. He gave his son a very good education, and obtained for him a clerkship in the India House. During his engagements in this situation he devoted his leisure hours to literary pursuits, particularly to the study of the Italian language, of which he acquired an extensive and very deep knowledge, as appears by his translations of Ariosto's Orlando Furioso, and Tasso's Jerusalem. He also published two volumes of the dramas of Metastasio, and was author of three tragedies, some poems, and the life of Mr. Scott of Amwell. He died in the year 1803.

HOOLI, the name of a cheerful festival, celebrating the arrival of the vernal equinox, as the "Dussera," at the end of summer, is appropriate to the autumnal equinox. It is observed in honour of Narrain, or the favourite god Krishna, of the Hindoo mythology, who is the Apollo of the Hindoos, the god of dance and music, of pleasure and of sport. This festival takes place the first full-moon after the sun has passed the vernal equinox, and is calculated to hail the approach of spring. Its ceremonies consist entirely of the most frolicsome and playful sports. All ranks and ages mix in its celebration; and among other acts, during its continuance, cast at each other handfuls of a pulverized scarlet flower, the jubba (*ivora Linnæi*), and thin elastic balls, filled with a liquid coloured by the same plant; these burst on the slightest resistance, and cover the whole dress and person of him who is struck by it with a crimson stain. It is deemed no disgrace on this occasion to bear the most obvious traces of the deepest dye; for when once the barrier of the "Zennara" (the apartments of the females), is broken down, the sovereign himself sets aside his high despotic character, and unbends in frolicsome festivity. Unrestrained liberty of speech and repartee prevails; and the females of every family particularly delight in giving free indulgence to these romping sports, which are equally kept

up by the Mahometans and the Hindoos. Turner's Tibet, p. 144, &c.

HOOLSOVRY, in *Geography*, a town of Hindoostan, in Dowlatabad; 15 miles from Balkee.

HOOLY-ONORE, a town of Hindoostan, in the Myfore country, situated at the conflux of the Toom and the Badra, where they form the Tungebadra; taken by the British troops in December, 1791; 56 miles N.W. of Seringapatam.

HOONGA-HAPAE, and **HOONGA-TONGA**, small islands in the S. Pacific ocean, belonging to the group of Friendly islands; 30 miles N. of Tongataboo. S. lat. 20° 36', and 10 or 11 leagues from the W. point of Annamooka. On the former five men reside, and the latter is uninhabited. Both abound with sea-fowl.

HOONLA, a town of Hindoostan, in the circle of Cicacole; 11 miles W. of Ganjam.

HOOP, a town of Norway, in the government of Wardhuys; 76 miles W. of Wardhuys.

HOOP, in *Rural Economy*, a name frequently applied to a high fort of cheese-vat, such as that used in making Stilton and other kinds of small rich cheeses. See CHEESE and DAIRYING.

HOOP, in *Agriculture*, the name of a dry measure of grain, which is equivalent to a peck, or a quarter of a bushel. See WEIGHTS and MEASURES.

HOOP Wheel. See DETENT-wheel.

HOOPER, EDMUND, in *Biography*, organist of Westminster Abbey, and a gentleman of the Chapel Royal, where he performed the duty of organist. He was one of the authors of the Psalms in four parts, published in 1594, and of several anthems in Barnard's Collection. His full anthems and services used to be performed in our provincial cathedrals within our own memory. He died July 14th, 1621.

HOOPER, JOHN, was born in Somersetshire in 1495, and educated in Merton college, Oxford. He was for some time a member of the order of Cistercians, but having imbibed the principles of the reformers, he quitted a monastic life, and went to Swisserland, where he was married. On the accession of Edward VI. he returned to England, and was made bishop of Gloucester, to which was added the bishopric of Worcester in commendam. Here he laboured with great zeal till the restoration of popery under Mary. Bishop Hooper was now thrown into prison, whither the good old Latimer also was sent soon after. Here he was exceedingly ill treated, underwent a mock trial, and was condemned to the flames through the means of the infamous Gardiner. Though tried at the same time with Rogers, who was burnt at Smithfield, he was sent into his own diocese to be executed. This circumstance was intended to strike the greater terror into the breasts of those among whom he had laboured in the gospel ministry; but it was to the bishop a source of consolation, who rejoiced in giving testimony, by his death, to the doctrine which he had formerly preached. When he was chained to the stake, a stool was set before him, on which was laid the queen's pardon if he would merit it by recanting his opinions. But he had made up his mind to the worst that bigotry could inflict, and was prepared for the savage punishment to which he was sentenced. He suffered it in its full severity; the wood was green, and could not easily be kindled; his lower parts were literally consumed before his vitals were attacked. One of his hands dropped off; with the other he continued to exhibit his fortitude and pious resignation to the will of God. He was three quarters of an hour in torture, which he bore with inflexible constancy.

fancy. This brutal act was perpetrated in the year 1555. Hume.

HOOPER, GEORGE, was born at Grimley, in Worcestershire, in the year 1640. He was educated at Westminster school, and from thence he was sent to Christ's college, Oxford in 1656. Here he distinguished himself by his talents and assiduous industry, and became very conversant in the knowledge of the mathematics and the ancient languages, including the oriental tongues, and particularly the Arabic. He took his degrees, and became chaplain first to Dr. Morley, bishop of Winchester, and then to Dr. Sheldon, archbishop of Canterbury. He was shortly after presented with the rectory of Lambeth, and the precentorship of Exeter. In 1677 he took his degree of D.D. and was sent into Holland to attend the princess of Orange as her almoner. When he returned from the continent he was offered the professorship of divinity at Oxford, which he declined, and in 1680 was appointed chaplain to the king. Little more is known of him from this time till 1691, excepting that he was commissioned by James II. to attend the duke of Monmouth in the Tower, on the evening before his execution. In the year already mentioned, during the absence of king William in Holland, queen Mary, without any application on his part, promoted Dr. Hooper to the deanery of Canterbury. In 1701 he was chosen prolocutor to the lower house of Convocation, and was offered the primacy of Ireland by the earl of Rochester, then lord lieutenant. In 1702 Dr. Hooper was promoted to the bishopric of St. Asaph, in which see he continued only six months, when he was removed to the see of Bath and Wells. This change he very much objected to, and absolutely refused farther promotion, though the bishopric of London and the archbishopric of York were successively offered him. It is said of him that he considered himself as married to his diocese, and he uniformly promoted his own clergy to all the instances of preferment that fell into his disposal. He regarded no interest, but made those the objects of his favour who were most attentive to the duties of their situation. The care of his parish was the best recommendation of a pastor to this vigilant prelate, and the continuance in his duty the most satisfactory requital that could be made him. Bishop Hooper died at Barkley, in Somersetshire, in 1727, having presided over his see nearly 25 years. He was author of a learned "Discourse on Lent, in two Parts: the First, an Historical Account of its Observation; and the Second, an Essay concerning its Original;" of "A Calculation of the Credibility of human Testimony," published in the "Philosophical Transactions;" of "An Inquiry into the State of ancient Measures, with an Appendix concerning our old English Money;" and various other works. They were all collected and printed at Oxford in 1757, in one volume folio. Gen. Biog.

HOOPER, in *Ornithology*, a name by which several have called the *cygnus ferus*, or wild swan.

HOOPING COUGH, in *Medicine*. See PERTUSSIS.

HOPOE, in *Ornithology*. See UPUPA.

HOORELL, in *Geography*, a town of Hindoostan, in Mewat; 24 miles N. of Dig.

HOORINGOTTA, a river in Bengal, formed by the union of several others, which runs into the bay of Bengal, N. lat. 20° 50'. E. long. 90° 6'.

HOORN, a sea-port town of Holland, situated on the Zuyder see. The town is fortified, as well as guarded by dams, has five gates, and contains some handsome buildings, churches, and hospitals. The adjacent land is very rich, and produces great quantities of butter and cheese, besides fattening lean cattle, brought hither from the more northern

parts of Europe; 11 miles E. of Alcmær. N. lat. 52° 39'. E. long. 4° 54'.

HOORN, or *Horn*, a town of France, in the department of the Lower Meuse, giving name to a small county in the bishopric of Liege; 3 miles W. of Ruremond.—Also, a small island in a bay on the N. coast of New Guinea. S. lat. 3° 42'. E. long. 135° 42'.

HOORN Islands, two islands in the South Pacific ocean, discovered in 1616, by Le Maire and Schouten; each of which was governed by a king. The inhabitants are described as large and tall, strong and well made, excellent runners and swimmers, of a yellowish brown complexion. Their hair was dressed in a singular manner, forming several tails, or erect, like hogs' bristles. The different ranks seemed to be distinguished by the number of these tails. Both men and women were naked, except a small covering round the middle. The women were very deformed, having long breasts that hung down below their stomachs like leather sacks. These people seemed to have no notion of a God or religious worship. S. lat. 15°. E. long. 171° 30'.

HOORN'S Island, a small island at the E. entrance of the straits of Sunda. S. lat. 5° 44'. E. long. 106° 24'.

HOORNBECK, JOHN, in *Biography*, a learned Dutch Protestant, was born at Hærem in 1517. He was divinity professor at Utrecht, and afterwards at Leyden, where he died in 1666. His application was very intense, and his learning various and solid. He understood many languages, both ancient and modern, as, the Latin, Greek, Hebrew, Chaldee, Syriac, Dutch, German, English, French, and Italian. He was author of very many works, which are enumerated by Bayle. He left two sons, of whom one, Isaac, was an eminent advocate at the Hague, and afterwards counsellor pensionary, keeper of the seals, and stadtholder of the siefs of Holland and West Friesland. Bayle.

HOORNE, JOHN VAN, a distinguished anatomist and physician, was born at Amsterdam in 1621. After the completion of his grammar education he was sent to the university of Utrecht for the purpose of entering on the study of medicine, and went through his course with honour. With a view to farther improvement he visited Italy; but on his arrival in that country he entered the Venetian army, in which he served for some time. Subsequently, however, his taste for science returned; and having studied under the most eminent professors of Italy he went to the universities of Basil, Montpellier, and Orleans, in the first of which he received the degree of M.D. with some very honourable testimonies of his abilities. In consequence of these he was appointed professor of anatomy and surgery at Amsterdam soon after his return; and in 1653 he was made professor of the same sciences in the university of Leyden, an appointment which he accepted with extreme pleasure, and which he fulfilled with much celebrity until his death, in January, 1670.

Van Hoorne was a man of considerable literary attainments, being master of eight languages. His reputation with posterity, however, rests principally on his anatomical knowledge. He had great reputation as a teacher of anatomy, and seems to have been the first to describe the thoracic duct in the human body, which Pecquet had already demonstrated in other animals. He is said to have been the first, likewise, to shew the intimate structure of the testes. He drew a great number of anatomical figures, with great elegance, which were never published, but which, according to Haller, were in the library of the celebrated Boerhaave, at Leyden. Besides having edited the works of Botallus, in 1660, and the book of Galen, "De Offibus," with the commentaries of Vesalius, Sylvius, &c. in 1665, Van Hoorne

was the author of several works, almost entirely relating to anatomy, viz. "Exercitationes Anatomicæ I & II ad Observationes Fallopii anatomicas," &c. Liege, 1649, 4to.; "Novus ductus clyliferus, nunc primum delineatus, descriptus, et eruditorum examini propositus," ibid. 1652; "Microcosmus, seu brevis manufactio ad historiam corporis humani in gratiam discipulorum," ibid. 1660, and several subsequent editions; "Microtechnæ, id est, brevissima Chirurgiæ Methodus," ibid. 1663, 1668, Lipsiæ, 1675; "Prodromus Observationum suarum circa partes genitales in utroque sexu," Leyden, 1668. This work was afterwards published by Swammerdam, who had made the greater part of the experiments there recorded, of which Van Hoorne only paid the expences. Swammerdam entitled it "Miraculum Naturæ," 1672, 4to.; "Observationes Anatomico-Medicæ," &c. Amst. 1674, 12mo.; a posthumous collection, under the title of "Opuscula Anatomico-Chirurgica," was published by professor Pauli, at Leipzig, 1707, 8vo. with annotations. Eloy, Dict. Hist.

HOOSACK, in *Geography*, a township of America, in Rensselaer county, New York, opposite Bennington, in Vermont, having 3141 inhabitants.

HOOSE, in *Rural Economy*, a term applied to an affection of the lungs, which is often met with in cows, pigs, and some other animals. In order to the removal of the complaint it has been lately advised to have recourse to equal quantities of vinegar of squills and balsam of copaiva, as one ounce of each, adding double the same proportion of balsam of sulphur, and four times as much honey, preparing it for one dose, by means of a quart of penny-royal tea, and giving it to the beast immediately, which should fast two hours before, and as long afterwards. It should be repeated every third day. Or, two ounces of powdered elecampane root, one each of salt of wormwood and powdered liquorice root, with the same quantity of the sweet spirits of nitre, and half an ounce of sulphurated quicksilver, may be given in the same way as above, and repeated every 24 hours.

While under these medicines, it is recommended that the beast should be kept in the house, except in very fine weather, and when the grass is quite dry. The drinking of cold water should likewise be avoided.

HOOST, PETER CORNELIUS VAN, in *Biography*, was born at Amsterdam in 1581, of respectable parents, who gave him a good education. He attached himself to writing in his native language, and obtained the highest reputation both in poetry and history, so that his works were considered as a model of style. His principal piece was the History of the Low Countries, commencing with the resignation of Charles V. and reaching to 1588. This is much valued for the accuracy of its political and military statements. It was first printed at Amsterdam in 1642, and has been several times reprinted. He was author also of a history of Henry IV. written in the Latin language; and in it is given a relation of the destiny of the house of Medici. His miscellaneous works were printed in four volumes, consisting of epistles, comedies, and poems. Hoost received the order of St. Michael from Lewis XIII. He died at the Hague in 1647. Moreri.

HOP, in *Botany*. See HUMULUS and LUMULUS.

We have but one species of this genus, which is distinguished into the male and female hop.

The male hop grows wild by the side of hedges and upon banks, in many parts of England. The young shoots of these plants are often gathered by the poor people, and boiled as an esculent herb; but these must be taken very young, otherwise they are tough and stringy. This is easily distinguished by the flowers, which are small, and hang in

long loose bunches from the side of the stalks; abounding with farina on their summits, and have no hops succeeding to the flowers.

Hops were first brought into England from the Netherlands in the year 1524. (15 Hen. VIII.) But they were known and used long before. They are first mentioned in the English statute-book in the year 1552, viz. in the fifth and sixth of Edw. VI. cap. 5. And by an act of parliament of the first year of king James I. anno 1603, cap. 18. it appears that hops were then produced in abundance in England.

HOP, in *Agriculture*, the name commonly given to a well known plant of the fibrous-rooted, perennial, climbing kind, which is chiefly grown for the use of the flower-bud, in affording an agreeable aromatic bitter to beer, and other sorts of malt liquor. There is only one species of this useful plant in cultivation, but it has a number of varieties, which are made use of in different circumstances and situations; such as the red bind, the green bind, the white bind, and some others. The first of these affords but a very small hop, yet, from its hardy qualities and habits of growth, it is capable of being employed with advantage in cold, exposed situations, where the climate and soils are not so favourable as might be wished, or improper for being planted with the other kinds. It is considered by many as resisting the *blight* more effectually than the other varieties, frequently showing health and vigour where the other sorts are greatly affected by the fly and the louse, as well as less exposed during the season of picking to the injurious effects of the sun and rain.

The green-bind variety, although much less hardy in its nature than the above sort, is a much more productive bearer, and not unfrequently succeeds admirably in the medium descriptions of hop-soils, even where the exposures are by no means the most favourable. The white-bind sort, however, which is still more tender and delicate in its habits, is in general held in the highest estimation by the hop planter, in consequence of its being more early, and the produce of much higher value in the market.

Hops are likewise frequently distinguished by the planters under the names of the Flemish, the Canterbury, the Goldings, the Farnham, and other similar titles. The Flemish sort is commonly supposed the most inferior in its qualities, being of the red-bind description. It is the female hop-plant which affords the produce which is the object of the planter. Where the male plant is met with, it should of course be removed, as of no utility.

As the different varieties of the hop become in a state of maturity at different periods, and are proper for very different kinds of soil, the planter should be careful that plants of the several sorts be not intermixed, in setting them out, upon the same plantation or hop-ground; as where there is an inattention in this respect, it causes much trouble in the culture of the crop afterwards, especially in extensive concerns of this kind, on account of the scarcity of the labourers for getting on sufficiently fast with the necessary work.

But where the different sorts are planted out in separate plantations, this difficulty is wholly obviated, and the business of securing and preserving the crops rendered much more easy and convenient in its accomplishment, by their becoming in a state of maturity at different times.

Situations for Hop-grounds.—The most suitable situations and exposures for the cultivation of hops are such as slope gently to the south, or which are level, and have a south-westerly exposure, but which have the benefit of being protected from the effects of the north and north-easterly winds by some sort of screen or shelter, as those of high grounds behind, &c. The plantations themselves should, however,

be pretty free and open, as the plants rise to considerable heights, and should not be too much confined, but have a full circulation of air about them, and the perfect admission of light, as well as the influence of the sun, amongst them; as, by such means, the healthy vigour and growth of the binds may be not only promoted, but the too abundant moisture that hangs upon them be speedily dissipated, and thereby the crops rendered less liable to be injured by the effects of the *blight* or *Ullst*, and the *mildew*, to all of which they are much exposed. Situations contiguous to the sea-coast, or in marshy and fenny tracts that are level, are seldom suitable to the cultivation of the hop, as crops on them mostly miscarry in unfavourable seasons for such produce.

Soil and Preparation.—The sorts of land which are the most proper for the growth of this kind of plant, are all those of the more deep, strong, friable, loamy, sandy, or clayey descriptions. They should have a disposition to dryness, without being too destitute of a proper degree of moisture, and be possessed of a good depth of mould of the rich vegetable kind. Soils of the thin, gravelly, and chalky sorts are quite improper for the culture of this sort of crop, as the former is not sufficiently retentive of moisture for the strong, healthy growth of the plants, and the latter imparts its humidity too sparingly to their fibrous roots, in consequence of its great absorbing quality.

Experience has, however, shewn that a thin, stony soil, which rests upon a sub-soil of the stony kind, and which is greatly intermixed with rich mould, is well adapted to the hop culture, and affords equally full crops with those of the rich deep kinds. The soil near Maidstone, in Kent, on which hops are extensively grown, is chiefly of this nature.

Such lands as have been long in the state of pasture, and which of course are much intermixed with vegetable matter, as those of old orchards, rich dry meadows, and other fertile pasture grounds, are in general the most proper for this use; but the hop may be grown on lands which have been under the plough, provided a sufficient quantity of manure be employed to afford a proper degree of fertility for the due support of the plants.

Whatever the state of the land may be, on which this sort of plant is grown, it should be perfectly reduced and broken down into a fine state of mould, to a considerable depth, by the repeated operations of the plough and harrow, or by being well trenched over by spade labour. The last is a very effectual method, where the land is to be broken up from the state of sward, though at present too expensive, in most situations, to be employed; but wherever it is had recourse to, the work should be performed in the early part of autumn, in order that the grounds may have the full operation and influence of the frosts, during the winter, upon them. These modes are both of them perfectly effectual in bringing hop-plantations into a fine state of mould, and at the same time, in clearing them of every description of weed that is injurious. During the concluding operations, where the plough method is practised, the land, if it be sufficiently dry, should be left in as regular and even a state as possible upon the surface; but where it inclines to be wet, it is better to have it ridged up, as by that means the superabundant moisture may be in a great measure discharged.

In all cases, just before the time of planting, a portion of compost, constituted of well rotted dung, and rich fresh vegetable mould, in the proportion of one of the former to two parts of the latter, well blended together for a considerable length of time, should be applied in the holes where the plants are to grow, in the quantity of about a bushel in each. This compost is usually set out over the whole of the

grounds first, and, after the holes have been formed, put into them.

The Sets and Methods of planting them out.—There are two sorts of sets occasionally made use of in forming new hop-plantations, as those made from the cuttings of the old binds, and root or bedded sets, which are taken off from the vines in breaking up old hop-grounds. The first sort is, however, most commonly made use of in the planting of new grounds, being formed in the early spring season. The latter sort is procured in the autumn from the old roots, in destroying former plantations. The cuttings should be made from the best and most healthy plants, each being cut to the length of about five or six inches, leaving two or three eyes or joints in it, as the buds from which the new plants are to take their origin. It is usual for them to be sold by the hundred of six score, at the rate of from sixpence to a shilling.

The work of planting is executed at different seasons, according to the kinds of plants or sets which are employed. Where root sets are made use of, the planting is generally performed in the autumn, about the end of October or the beginning of the following month, this being the period at which the former grounds are commonly dug up.

But where the cuttings of the binds are employed, the best season of planting is usually in the spring months, as from the end of February to the beginning of April, as the season may be suitable; this being the time of cutting over and dressing the old binds, when the sets can be most readily provided.

In the business of planting there are different forms and distances preferred by different planters, according to the method in which the culture of the crops is afterwards to be performed. In cases where it is to be executed by means of horse labour, which is the least expensive method, the best plan is that of setting them out in rows, at suitable distances, so as to form straight lines in all the different directions. But where the work is to be done by means of hand-labour, this is not of so much importance, if proper care be taken to allow sufficient space for the perfect growth of the plants. Some, in this case, practise the row plan, while others have recourse to what they call a triangular plan. It is plain, however, that the planting in rows at equal distances, in such way as to admit of the ground between the plants being kept clean and in order by the harrow and ridget, must be far less expensive than that of the irregular mode, in which hand labour can only be employed.

The different distances at which the holes and hills are formed, on which the plants are to be set out, vary greatly according to circumstances. Some good planters recommend six feet and a half, or seven feet; while others are in the habit of giving preference to a five or six feet plant. In consequence of plants of this sort growing with great luxuriance and rising to great heights, of course sending forth much bind and foliage, they necessarily require a large space, as where they stand too closely together, they are not only more apt to become infected with disease, but to *house* or *twilt* together above the tops of the poles, by means of which, such a degree of shade is given as prevents the hops below from completing their growth, and thereby lessens the quantity of produce in the crop. For these reasons it would appear, that the hop cannot be beneficially cultivated in a smaller space than six or seven feet; on rich good soils the latter distance may be the more proper, but on others of inferior quality, the former.

There is a method of planting practised in some districts on
soils.

soils that are inclined to a moist boggy state; which is that of forming the plantations in the bed-method, by digging them sixteen feet in width, and taking out the trenches three feet in breadth, and from two to two and a half in depth, the earth which is removed being evenly spread out over the large previously prepared beds. On these, after the holes have been formed a spit in depth, twelve inches in diameter, and six feet distant in each direction, the sets are put into the soil, in three rows on each large bed, in the manner that is usual in other cases.

Making the Holes and forming the Hills.—The holes for the reception of the manure are marked out in various modes; according to the particular practice of the district, and the taste of the planter; with some it is the custom to have recourse to a line with knots formed in it, at the spaces which are intended for the holes; but others mark off at once the places for the holes, by driving short stakes into the ground at proper distances in each direction. There is, however, a more expeditious mode of proceeding than either of the above ones, which is that of striking furrows by the plough in different directions of the hop-grounds, at the necessary distances, in such a way as to constitute a kind of squares, the holes being formed in the angles where the furrows cross each other. Whichever method is followed, the holes are made by taking out the mould, to the depth of about twelve inches, by a spade, or, what is much better, by the tool termed a *spud*; always forming them in a circular manner, with the diameters of about eighteen inches; the bottom mould or soil being a little stirred or loosened at the time. These holes are then to be filled partially with some of the compost already noticed, the mould that was taken out of them being replaced upon the compost, in such a way as to form small risings or sorts of hills. The sets or roots are afterwards planted out upon these hills, to the number of seven upon each, by means of a proper dibbling stick, one being placed exactly in the middle or top of each of them, and the rest at equal distances round it, at the distance of about four or five inches from the sides of the holes. It is usual to put the sets or cuttings into the depth of about two inches in the compost, in such a manner as to have the tops wholly covered by the mould on the surface part of the hills. It is thought better, however, by some planters, to have them covered lightly by the fine mould from the holes, after they have been planted out in the compost to nearly the above depth.

In setting out the plants on the large ridges, on the boggy sorts of land just noticed, the work of hoeing and hilling is commonly performed towards the latter end of July, or beginning of the following month.

After the business of hoeing, hilling, and setting out the plants has been thus executed, nothing further is necessary to be done, until about the middle of May, except that of keeping the land about the plants well loosened, and perfectly clear from all sorts of weeds, at which time, in consequence of the growth of the young plants, it will be requisite to apply an additional quantity of fine mould about them on the hills, which should be scraped up from the intervals, with the view of checking the too luxuriant growth of the young shoots, and thereby promoting the vigour of the shoots; some likewise twist the shoots together into a kind of knot. Others, however, think it better to make use of two small sticks, about a couple of yards each in length, which are set firmly into each hill, so as to direct the climbing of the shoots, two or three, or more, being led up each stick, and occasionally tied with balf or sedge during the summer season. There

will be a second moulding necessary, in the same way, about the end of July, or beginning of the following month.

Where the planting is done on the boggy descriptions of land noticed above, the plants are poled in about three weeks with old short poles, to each of which two or more of the binds are tied, the land being kept clean by hoeing and raking over occasionally. This method is however more tedious and expensive than the others, without much superiority. By the whole process the ground may probably be kept somewhat more dry and free from injurious moisture.

Other sorts of crops are by some grown along with those of the hop kind, such as those of the common bean, French bean, cabbage, and onion kinds; but this is a practice that should seldom be had recourse to, as injury may be done by it to the hop-plants, by their affording too much shade, and thereby preventing the free admission of air, light, and sun to the young binds. Onions are the least exceptionable sort of crop for this purpose, in consequence of their low growth, and their requiring to be sown at the time the hop sets are put into the soil. For the first year or two after the hops are put into the soil they may therefore be employed in some cases with benefit. All sorts of tall growing crops should, however, be carefully avoided.

Hop-plantations, though they require some years to come to perfection, should rarely, if ever, have any produce taken from them the first after they are formed, as by such means great detriment is often done to the future produce which they should afford. The Suffolk planters, in the mode of planting which they make use of, however, not unfrequently take a produce of from three to five hundred weight of hops, even the first year. Where bedded or root sets are used in planting, a small produce is even capable of being taken the first season, as the plants or binds are nearly as forward at that period as those from cuttings are in the second.

In cases where hop-grounds have been formed with care in these methods, and where the soils are well suited to the growth of the plants, they are capable of continuing in bearing for a great number of years, as twenty or more, the defects that take place in the hills being carefully supplied as they may occur. However, though this may be done, it is suggested as a better practice in most cases to renew the plantations at considerably shorter distances of time, or to occasionally renew certain portions as they may be found necessary and convenient. And, in all cases, to render such plantations as productive as possible, whether cultivated in the spade, plough, or hoe methods, the land in the intervals should be well stirred two or three times in favourable periods, and in particular cases more frequently.

It is rarely necessary, in the second year of the plantations, to apply any manure to the hills; but the ground in the intervals should be well loosened and stirred in the autumnal season, in the same way as in the first year; however, in the early spring months, in suitable weather, as about the middle of March, the hills should be opened, and the earthy mould well cleared away from the chief roots by a tool which is denominated a picker, in the view that the stocks may be properly pruned and dressed over; in which, all the bearing items of the preceding year are cut off within a joint or two of the roots; and all such shoots or suckers as were not permitted to be attached to the poles, or which have proceeded from the edges of the hills, completely cleared away, nothing being suffered to continue that can possibly injure or retard the healthy growth of the young plants or binds. Care

should

Should be taken in the execution of this sort of work, that the various stalks and roots be fully laid bare and open to such a depth, that every thing that is prejudicial may be seen and eradicated. In the work of cutting over, experienced labourers should constantly be employed as much as possible, as a great deal depends upon this sort of work being properly executed, much injury being capable of being sustained by the leaving too much length of bind, or by too closely cutting the stalks. By the former the crops are liable to be exposed to *canker*; and by the latter, the hills to be so much weakened as not to afford shoots in sufficient abundance. Consequently, this sort of work should always be carefully overlooked. When the business of pruning and dressing has been finished, the mould should be raked and returned back again to the plants, so as to constitute as before a sort of hills.

It is necessary likewise at this period that all such plants as appear weak and unhealthy should have others put in their places, that the hop-grounds may be kept quite perfect. Such prunings as are made from the most healthy and strongest plants may be reserved for being employed in forming new plantation grounds. And in this season likewise, as well as the preceding, three hoeings and one good moulding up should be given, the first at the beginning of May, the next about June, and the last in the succeeding month; a little fine mould being each time drawn up to the roots of the plants on the hills, so as to keep them in a properly moist situation. The mouldings up should be performed about the beginning of August, the earth being well laid up over the hills, round the root-stems of the plants. It is the best done as soon as possible after rain has fallen.

Poling the Plants.—This is the next operation which becomes necessary, and the usual rule in its execution is to begin the work as soon as the binds have sprung up to the height of two or three inches above the surface of the land, which is usually about the end of April or beginning of the following month. The most advantageous number of poles to each hill has not yet been fully ascertained, but as a full and free admission of air, light, and sun is essential to the healthy growth of the plants, it should evidently not be too great, so as to produce much closeness. Three are the most general allowance, though more are frequently made use of in the business. These should be placed in such a manner as to leave the largest spaces or openings towards the south or south-west, in order that the plants may derive the more full influence of air, light, and heat, and those which are the strongest on the side towards the north, that they may the more effectually resist the effects of winds from these quarters. The poles are fixed in the earth in general by means of a tool termed a crow, which is made of iron, and which forms the holes to the depth of eighteen or twenty inches, the sharpened root ends of which being forced into them, the earth is afterwards immediately closed and rammed in about them. The chief difficulty of this business depends on pitching the holes to proper depths, on setting the poles down with such force as that they may be firmly fixed at the bottoms, and on their upper parts having a direction outwards so as to prevent the houlings of the binds above them. If these objects be not attended to, there may be great loss from the destruction of the plants. After the poles are set down, two or three binds may be trained up, each of them being tied in the manner already noticed in several places, by labourers accustomed to the work, and repeated as there may be occasion. In cases where the poles are tall, and the binds strong, standing ladders may be necessary in executing the work near the tops of the poles.

It is found that this business requires particular regard in the early part of the summer. When the binds prove unexpectedly strong and vigorous in their growth, and the hills have been polled with short slender poles, it may occasionally repay the trouble and expence, to have them repolled with those of taller and stronger kinds, and the short ones removed. In some instances great advantage has been gained in this way.

In the more early growth of the plants, the superfluous binds of every sort should be repeatedly removed during the summer season, as they show themselves, merely reserving one or two on each hill, to supply the situations of such as may have been injured in their first training to the poles, as such accidents not unfrequently occur, from the tender buds being bruised or twisted off by the great agitation caused by the action of the winds and other causes. These are the whole of the necessary operations in the culture of the hop, previously to the season at which the produce becomes ripe and ready for the hop-picker, which is known by the fragrant smell that is emitted from them, and their becoming firm, and of a brown colour. This usually takes place about the middle of September, but sometimes earlier.

Picking the Hops.—This is a business that requires much care and attention to see that every thing proceeds with propriety and dispatch, as there is constantly much danger to be apprehended from delay, the crops being equally exposed to mischief from the effects of the winds as those of continued rains. Preparatory to this work it is necessary to have proper baskets, and bins or cribs in readiness, and sufficient in number to the extent of hop-ground and pickers which it may be requisite to employ. These things being in due order, the hop binds are cut over close to the surface of the ground by persons used to the business, and the poles drawn up; and then placed upon the frame of the bins with the binds upon them, generally to the number of two or three, in order to the hops being picked from them. It is common to employ three or four pickers, or more, on each side of a frame, for clearing the hops from the binds, which, with the person whose business it is to sort the poles, are termed a set. But several sets are engaged in the same grounds, where they are large. And it is not unfrequent to employ women and children in this sort of work. When carefully separated from the binds and leaves, the hops are dropt into cloths hung upon tenter hooks underneath, within the frame. As soon as this is filled, the hops are removed into a large sack, in order to their being taken home to be dried on a kiln for the purpose. It is constantly necessary that this should be performed as quickly as possible after the picking is done, that the hops may not sustain any damage by continuing together in their damp or moist green condition; as where this is the case, they are frequently liable, particularly in warm seasons, to be much hurt both in colour and flavour, even in a few hours, by the slight fermentation which comes on. The kiln is of course kept constantly in readiness, and at work day and night during the picking season. The pickers should consequently be well proportioned to the quantity of hops that can be dried off. Where the hops are suffered to accumulate, they should be put in small parcels loosely placed together. See *HOP-basket*, *HOP-bin*, *HOP-crib*, and *OAST*.

Where crops of this sort are tolerably full, a good picker will separate from eight to ten bushels of hops from the binds in the course of the day, which after being stowed or dried, mostly weigh about one hundred weight. It is not unfrequent to let the picking of hops, in some places, by the bushel, at prices varying according to the ease, or difficulty

of providing labourers. It will be necessary to have from sixteen to twenty expert pickers, in favourable seasons, where the produce is good, and where the oast is capable of drying off about eighty bushels at each measuring. In addition to the pole puller and pickers it will be necessary to have another person in the plantation, in order to pick up the scattered and straggling branches of the binds, and convey the hops to the oast or kiln. For this purpose a boy is sufficient, who, from the nature of his employment, is usually denominated the poke-boy. Horse or hand labour is employed in the conveyance of the hops, according to the distance from the kiln. The dryer should be perfectly steady and regular, and have a full knowledge of the business, as the profits of the planter greatly depend upon it; but the hop-grower should never be inattentive to these matters himself. The wages of the different people who are engaged in these operations vary much in different places, according to particular circumstances, but the Kentish hop-farmers formerly paid the pole pullers from eighteen pence to two shillings the day, with small beer, the dryers half-a-crown, with an unlimited allowance of beer and spirits, and the pickers from three half-pence to two-pence the bushel, with allowances of spirits, &c.; but these prices are pretty nearly doubled at present.

After the business of drying has been executed, the hops are taken away from the kiln by a shovel, and put in a room close at hand, formed for the purpose, and termed the stowage-room. Here they are kept for five, six, or a greater number of days, as there may be occasion, before they are become in a state proper for being put in the bags; as, when bagged too soon, they are brittle, and neither draw so good a sample, or weigh so heavy, as is otherwise the case. The best criterion is for them to remain until they have attained a tolerable degree of toughness, which is readily known by the feel. See OAST.

Bagging the Hops.—In order to render the bagging of hops easy and convenient, a round hole or trap is cut out and formed in the floor of the stowage room, exactly equal in dimensions to that of the mouth of the bag, on which a frame of wood is fastened, to which the edges of the opening of the bag are securely fixed quite round. Then in each of the lower corners of the bag a small handful of hops is firmly tied, when it is let fall through the hole to below, and the person termed the packer places himself in it, and by means of a heavy weight which he keeps constantly moving round in the places where he is not treading, presses and forces the hops down in a very close manner into the bags, as fast as they are thrown into them, in small quantities at a time, by another labourer. The work proceeds in this way until the bag is quite full, when each of the upper corners have a few hops tied in them in the same manner as those at the bottom, which serve as handles for removing them by. The bag is then taken up, and its mouth properly secured, after being taken from the frame. The closer the hops can be stowed into the bags, the better they keep both in their colour, smell, and taste. Some loss in the weight constantly takes place in the operations of drying, stowing, and rendering the hops proper for being bagged; it being the opinion of some that sixty bushels of well ripened fresh gathered hops, that have not been infested with the fly, will not, when dried and bagged, produce more than about one hundred weight. See HOP-LAG.

Sample.—The goodness of samples of hops depends upon several different circumstances, but principally on the clammy feel of the yellow farinaceous powdery matter which is sprinkled over them, and their colour; the former of which,

in the language of the hop planter and dealer, is termed the condition, and the sample considered the more or less valuable by those who are purchasers, the more or less clammy it is in its feel; while it is of the greatest consequence in relation to the latter, that it should be preserved as bright as possible; yet it does not always follow that the brightest samples are the strongest in their flavour. These properties are likewise the cause of the planters making a distinction in the bagging of the hops, as well as in the stuff in which it is performed. See HOP-BAG.

Stacking the Poles.—As soon as the picking and other operations have been executed, the poles should constantly be collected together, cleared from the binds that may be upon them, and set up in proper stacks; if the work has not been done already, while the business of picking was going on. The poles are liable to be much damaged by remaining on the ground when surrounded with bind. This sort of work is often done by the acre, which is probably the best method. The old short improper poles are at this time separated and reserved for the new plantations, so that the planter is enabled to ascertain the quantity of new poles that will be wanted for the next season, which it is highly advantageous to have provided and prepared during the leisure of the winter months. It is the custom to have the bark from all the sorts of poles, except those of the ash kind, in which it separates naturally the second season, that they may not be destroyed by the lodging of the worm in them. See HOP-POLE.

Clearing away the Bind.—Immediately after the business of stripping and stacking the poles has been completed, the bind should be cleared away, which in some places is done by tying it up into faggots, bays, or small bundles, when in a perfectly dry state, being then either stacked up or placed in sheds or other situations, in order to be used as fuel in ovens or other ways. The work is usually executed at the rate of about sixpence the hundred. Some planters however burn it upon the land, while others again permit it to be taken away by the labourers, for their own use. But the first is the best method. Whatever mode is in use, it should not be neglected to be removed from the ground as speedily as possible, in order that it may not interfere with the future culture of the plantations, such as the winter diggings of it, the applications of manure of the compost kind, and the taking up of the old stocks of the plants when they become in a declining state.

Produce.—Hop crops vary more than most other sorts in the quantity of produce, being capable of affording, under different states of soils and seasons, from two hundred to more than twenty hundred weight per acre. Upon the best middling descriptions of soil, in pretty favourable years, it may be reckoned from six to eight or nine hundred weight, from ten to fourteen being moister supposed good crops. So large a produce as twenty hundred weight but rarely happens, and cannot be much expected by the planter.

Expenses of cultivating Hop Crops.—In the county of Kent, the price that was formerly paid for the several different operations that become necessary in their culture, such as hilling, winter digging, cutting, preparing poles, peeling, tying, nidgeting, hoeing, picking and stripping, and stacking the poles, was about 4*l.* 11*s.* 4*d.* per acre. And the whole of the annual expence, supposing the growth to be an hundred weight per acre, and the different operations executed at stipulated prices, by known neighbouring workmen who can be depended upon, to be 28*l.* 12*s.* 6*d.* including the undertaker for overlooking the plantation, who pays the workmen

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workmen for the different operations, picking, drying, duty, rent, poles, manure, tythe, bagging, and nidgeting.

But where the planter pays the several labourers himself, the expences will amount to 29*l.* 11*s.* 4*d.* which leaves a profit of 19*s.* 4*d.* in favour of the former method of having the work performed.

These expences at present stand a great deal higher, perhaps nearly one-half.

In the Hints to Gentlemen Farmers, the expences and profits of cultivating hops are stated in this way.

Expences per Acre.

| | <i>£.</i> | <i>s.</i> | <i>d.</i> |
|--|-----------|-----------|-----------|
| Medium price of hop land, per acre, | 1 | 10 | 0 |
| Digging the ground | 0 | 13 | 0 |
| Dressing and pruning | 0 | 8 | 0 |
| Poling | 0 | 15 | 0 |
| Hoing three times | 0 | 9 | 0 |
| Moulding once | 0 | 3 | 6 |
| Tying binds to poles | 0 | 12 | 0 |
| Stripping binds from poles | 0 | 3 | 0 |
| Stacking poles | 0 | 4 | 0 |
| Sharpening poles | 0 | 10 | 10 |
| Manuring | 2 | 0 | 0 |
| Picking, drying, and duty, at 1 <i>l.</i> 10 <i>s.</i> 0 <i>d.</i> the hundred, crop supposed 12 cwt. the acre. | 18 | 0 | 0 |
| Bagging, with occasional expence of new bags, about | 0 | 16 | 0 |
| Ash poles, estimated at 30,250 the acre, and supposed to last eight years, medium price 18 <i>s.</i> the 100 at the stub, the eighth part of which is nearly | 3 | 13 | 0 |
| Carriage of them | 1 | 5 | 0 |
| | £ | 31 | 2 4 |

These expences have since increased in a very great degree, probably not much less than one half.

Produce per Acre.

| | <i>£.</i> | <i>s.</i> | <i>d.</i> |
|---|-----------|-----------|-----------|
| Supposing 1,200 cwt. per acre, and the medium price 4 <i>l.</i> per cwt. the amount will be | 48 | 0 | 0 |
| The expence deducted from the produce leaves a medium profit of | 16 | 17 | 8 |

The profit, from the expences being lately so much augmented, must now be placed much higher.

The expence of forming new hop grounds is commonly very great, in many districts being found to be not less than from sixty or seventy, to one hundred pounds the acre. In some cases they now stand much higher.

The most favourable seasons for the growth of this sort of crops in the whole of their different stages, are such as are warm without too much wet, and where the south and south-westerly winds predominate, as they never answer well where there is continued wet weather, or when northerly or easterly winds prevail for any length of time in the summer season. Other causes of great injury to these crops are likewise found in hot gleams of sun-shine after falls of rain, or succeeding foggy mornings in the more late summer months. Great mischief is also produced by high winds towards the time of picking, in consequence of the hops being much bruised and otherwise injured. The produce of such crops is rarely either good or abundant, where unsuitable weather occurs about the time the hops are in blossom,

as a number of the *bars* never become perfect hops. Forward and luxuriant crops almost invariably suffer more from all the hurtful causes which affect the hop plant, than such as are later and of less strong growth. It may consequently be very useful in particular exposed situations to remove all the more forward binds.

To ascertain the duty of this sort of produce, it is necessary for the planter to be in possession of the different acts concerning it. However, every grower of hops is bound to give notice, on or before the first day of September, of the number of acres he has in this sort of cultivation; the number and situation of his oasts; and the place or places of bagging; which together with the store rooms, warehouses, &c. in which the packages are designed to be lodged are entered. And no hops can be removed from the rooms so entered until they have been weighed and marked by the proper officer; who marks, or ought to mark, on each package not only the weight, but the name and residence of the person by whom the hops are grown.

It may be noticed that the original duty was a penny on every pound weight, but the percentages that have since been added have raised it to about twenty-four shillings a bag, or thirteen shillings and fourpence the pocket, which is nearly ten pounds the ton. These were the duties in 1790, but they have since that time been still further increased in a high degree. This large duty is usually paid to the collector of the excise for the particular district, and the grower has six months credit given him.

Hop crops are upon the whole both expensive and uncertain, and the cultivation of which should be well weighed before it is began. Where the soils are quite suitable for them; and there are poles ready at hand upon the land, with a sufficient capital in the pocket of the planter, the hop culture is perhaps a kind of husbandry that may be practised with benefit; but under other circumstances it will seldom be found profitable. Where hops are grown in connection with a farm, it is necessary to attend to the extent of land that can be manured without injury being done to the other grounds under tillage husbandry.

There are few field crops more exposed to injurious affections than that of the hop. In its more early growth it is liable to the ravages of an insect of the *flea* kind, just as it proceeds from the surface of the soil. When at a more advanced stage of its growth, it is exposed to the more destructive attacks of the *green long-winged fly*, the *red spider*, and the *otter moth*. Lice are produced in large quantities by the former, in consequence of their depositing their *ova* about the bottom parts of the plants, by which they are not unfrequently in a great measure destroyed; while the *larvæ* of the latter prey upon the roots from which the plants become weakly in their growth, and unhealthy. About the same time the *honey dew* is another morbid state to which the hop-plant is exposed, and by which it frequently suffers greatly. The *mould* or *fen* generally takes place at a rather later period, but is not less prejudicial in its attacks. The *blight* and *fire-blast*, to which hop crops are likewise subject, occur at different periods, but commonly towards the more late stages of the growth of the crops. All these different causes are extremely detrimental to the hop-planter, frequently proving suddenly destructive to his most promising crops. See **BLAST and LIGHT, FLEA, HONEY-dew, LONG-WINGED FLY, MOULD, MILDEW, RED SPIDER, and OTTER-MOTH.**

Hops, Diseases of. See **FIRE-BLAST, FEN, HONEY-Dew, &c.**

Hops, Use of. In the spring time, while the bud is yet tender, the tops of the plant being cut off, and boiled, are

eaten like asparagus, and found very wholesome and effectual to loosen the body; the heads and tendrils are good to purify the blood in the scurvy, and most cutaneous diseases; decoctions of the flowers, and syrups thereof, are of use against pestilential fevers; juleps and apozems are also prepared with hops, for hypochondriacal and hysterical affections, and to promote the menses.

Extract of hops, *extractum humuli*, is made by boiling down half a pound of hops in a gallon of boiling water to four pints, straining the hot liquor, and evaporating it to a proper consistence. It is introduced into the London Pharmacopœia, because it is supposed to possess both a tonic and sedative power combined.

A pillow stuffed with hops, and laid under the head, is said to procure sleep in fevers, attended with a delirium. But the principal use of hops is in the brewery, for the preservation of malt liquors; which by the superaddition of this balsamic, aperient, and diuretic bitter, become less viscid, less apt to turn sour, more detergent, more disposed to pass off by urine, and in general more salubrious. They are said to contain an agreeable odorous principle, which promotes the vinous fermentation. When slightly boiled or infused in warm water, they increase its spirituousity.

Hops, *Laws relating to*. By 43 Geo. III. c. 68. for every hundred weight of hops imported, shall be paid a duty of 3*l*. 5*s*.; and on exportation there shall be allowed a drawback of 4*l*. 4*s*.; and for every pound of Irish hops imported a duty of 2½*d*. (43 Geo. III. c. 69.) And foreign hops, landed before entry and payment of duty, or without warrant for landing, shall be forfeited and burnt; the ship also shall be forfeited, and the person concerned in importing or landing shall forfeit 5*l*. a hundred weight. (7 Geo. II. cap. 19.) Hops of British growth may be exported to Ireland; bond being first given to the commissioners of excise, that the said hops shall not be reloaded, and oath made before such person as they shall appoint, that the duties have been duly charged; upon which the person exporting the same shall have a drawback of the duties before paid; and provided that such hops shall be reloaded, or put into any ship in Great Britain (except in case of shipwreck, or unavoidable accident), the same, or the value thereof, shall be forfeited, over and above the penalty of such bond; and may be seized by any officer of the customs or excise. (26 Geo. III. c. 5.) And for every hundred weight of hops, grown in Great Britain, which shall be cured, and made fit for use, shall be paid by the owner or possessor thereof, a duty of 2½*d*. (43 Geo. III. c. 69.) By 9 Anne, cap. 12. hop-grounds are required to be entered, on pain of 40*s*. an acre. Places of curing and keeping are also to be entered, on pain of 50*l*. which may be visited by an officer at any time without obstruction, under the penalty of 20*l*. All hops shall, within six weeks after gathering, be brought to such places to be cured and bagged, on pain of 5*s*. a pound. The rebagging of foreign hops in British bagging for sale or exportation, incurs a forfeiture of 10*l*. a hundred weight; and defrauding the king of his duty by using twice or oftener the same bag, with the officer's mark upon it, is liable to a penalty of 40*l*. The removal of hops before they have been cured, bagged, and weighed, and the duties ascertained, incurs a penalty of 50*l*. Concealment of hops subjects to the forfeiture of 20*l*. and the concealed hops; and any person who shall privately convey away any hops, with intent to defraud the king and owner, shall forfeit 5*s*. a pound. And the duties are required to be paid within six months after curing, bagging, and weighing, on pain of double duty, two-thirds to the king, and one-third to the informer. No common brewer,

&c., shall use any bitter ingredient instead of hops, on pain of 20*l*. Notice of bagging and weighing shall be sent in writing to the officer, on pain of 50*l*. (6 Geo. cap. 21.) And twenty-four hours' notice shall be sufficient, by 39 & 40 Geo. III. cap. 81. Officers shall make due returns to the commissioners, and leave a true copy with the planter, or owner, or forfeit 5*l*. 9 Anne, c. 12.

The owners of hops shall keep at their oasts, &c., just weights and scales, permit the officer to use them, and assist in weighing, if required, on pain of 50*l*. A penalty of 100*l*. is inflicted for false scales and weights. No officer inferior to a supervisor shall weigh hops between five in the evening and four in the morning, on forfeiture of 20*l*. (39 & 40 Geo. III. c. 81.) By the same, repealing the 14 Geo. III. c. 68. the owner or grower, before he begins to put any hops into a bag or pocket, shall mark on the outside, in large legible characters, with durable ink or paint, his name and place of abode, on pain of forfeiting 50*l*. nor shall hops be bagged into any bag of greater weight than in the proportion of 10*lb*. for every 112*lb*. of the gross weight of bag and hops, on pain of forfeiting 20*l*. The officer, after weighing, &c., hops for the purpose of charging the duty, shall mark in like manner on every bag or pocket the gross weight, together with the year of growth, and the progressive number according to the number of bags charged to each owner or grower in each such current year; counterfeiting such marks incurs a penalty of 100*l*.; and wilfully defacing or obliterating them, or causing the same to be done, subjects to a forfeiture of 20*l*. The owners are allowed to use casks instead of bags, under the same regulations. (6 Geo. cap. 21.) No hops shall be removed from the place of weighing, until twelve hours next after bagging, weighing, &c., unless the same shall have been reweighed by the supervisor; and if any additional weight shall be found, the same shall be charged with the duty; and if any owner or grower shall convey away any such hops, contrary to the meaning thereof, he shall forfeit 50*l*. for every such offence. (39 & 40 Geo. III. c. 81.) If any person shall mix with hops any drug to alter the colour or scent, he shall forfeit 5*l*. a hundred weight. If any person shall unlawfully and maliciously cut hop-binds growing on poles, in any plantation, he shall be guilty of felony, without benefit of clergy. 6 Geo. II. cap. 37.

HOP-bag, in *Agriculture*, the name of the sack-cloth bag in which the stoved and dried hops are stuffed in order to their being sold. There are two sorts of cloth employed in this intention, according to the nature and quality of the hops; such as are of a bright fine colour and a good sample, being put into such bagging as is of a fine kind, under the denomination of *pockets*; but those which have a dark colour into a coarse heavy kind, termed *bags*: the former of these sorts of hops is employed for ales, and all the finer kinds of malt-liquors, but the latter chiefly for the brewing of porter. It is suggested that the coarse sort of bagging-stuff is the best, where the hops are to be kept for some length of time.

The necessary lengths of these sorts of bagging are about two ells and a quarter for the *bag*, and nearly the same for the *pocket*, each of them having an ell in width. The first, or *bags*, when the hops are of a prime quality, well cured, and trodden into them with tightness, will weigh about two and a half hundred weight; but the latter, or *pockets*, when of Canterbury pocketing, only about one and a half hundred weight.

In cases where the variations from these standards are in any degree considerable, the preparation or sample may be suspected with propriety.

Hop-basket, the name of a kind of large flat basket employed for carrying the hops in, during the period in which they are picked.

Hop-bin, the name of the crib or bin, into which the hops, after being picked from the bind, are thrown. It is mostly constructed merely in a temporary way, by fixing four or more pieces of boards upon as many upright posts set firmly into the ground as a frame, by means of nails. When finished, they should be full seven or eight feet in length, three feet in breadth, and the same in height, the side pieces at the ends projecting as a sort of handles. Each end has a support, which rises two feet above the top of the frame; on the tops of which rests a straight pole, the whole length of the frame, or rather more; the whole structure having somewhat the resemblance of a small market-booth, without a covering; only that, in the place of the flat surface for the reception of the wares, there is a canvas bag adapted to the size of the frame, hung within, so as nearly to reach the ground, in order to receive the hops as they are picked from the stems. Such as are formed eight feet in length are usually termed *bins*, and those of four feet in length *half-bins*. The contrivances of this nature should constantly be well proportioned to the number of pickers that are employed, in order to prevent the loss of labour, which would otherwise take place.

Hop-clover, the common name of a plant of the clover kind, which grows naturally in most meadows and pasture lands of the more dry descriptions, commonly flowering towards June, or the following month. It has been advised of late as beneficial in laying lands down to sward, when combined with other seeds of the grass kind; and is asserted to afford an excellent fodder, when sown on the lighter sorts of soils. See CLOVER.

Hop-dag, a name given to a sort of lever formed from a long piece of strong round timber, having a kind of fixed fulcrum or rest at the lower part, the end of which is set or shod with a strong piece of toothed iron, which firmly grasps and holds the bottom end of the hop-pole, when, by the action of the lever, the hop-pole is wrenched up from the ground, and much labour saved.

Hop-harrow, a name given to a sort of harrow that is employed after the nidget by different hop cultivators, in order to bring the soil into a very fine state of mould. It is constructed pretty much in the form and on the principle of the nidget, having only a small wheel fixed in the front of it, in order to turn round at the ends of the rows, with more facility than would otherwise be the case. It is guided in the intervals or alleys, and the bruising of the binds prevented, by having a pair of handles fastened on behind, and held by a man. The tool complete costs about two guineas. An implement of this sort is stated in the Middlesex Report to have there been found highly beneficial in the practice of Mr. Maynard; it is so constructed as to have somewhat the form of the snow-plough, being an equilateral triangle, the sides of which are four feet in length, and the front ones shod with old scythes; the whole being strongly framed and put together, that it may bear to be loaded when it is made use of in the work.

It is suggested that, by drawing this tool once in a place in the intervals between the rows of plants, it is capable of rendering them "perfectly clean, and as smooth as the well rolled walk of a pleasure ground," besides, earthing up the rows in the same operation, which, in about ten days or a fortnight afterwards, may be readily formed by means of spades, into hills for the reception of the plants.

Hop-hovel, a term applied to a small building or place of shelter, in which the business of picking the hops from the

binds may be executed with convenience, in cases in which the plantations are at some considerable distances from the houses of the proprietors. In this way labour and expence may often be saved to the hop farmer.

Hop-horn-beam, in Gardening. See CARPINUS.

Hop-nidget, a name given to a tool formed in a somewhat triangular manner, but of different dimensions according to the distances of the alleys or intervals in which it is to be employed, having cross bars or beams into which are fixed a number of hoes, proportioned to the breadths of the intervals in which they are to work, in such a manner that the hinder part, which is the widest, may pass along without doing any sort of mischief to the binds on the different sides of it. A pair of handles is fixed to it behind by means of which it is directed in the execution of its work. It is usually drawn by a single horse and managed by a boy; and in this state is capable of cleaning two acres in the course of the day. In making use of it, care should be taken that in completing the labour, the intervals or alleys be all gone over or crossed in the same line of direction; as by this means every part of the surface, except the portions occupied by the hills, may be effectually cut over. The spaces forming the hills must afterwards be cleaned and rendered free from weeds by hand-hoeing. This tool should continue to be made use of occasionally as there may be necessity, until the hop plants begin to branch out in such a way as to impede the passage of the horse in the alleys or intervals of the rows. In this mode hop-plantations are capable of being kept in a clean condition and perfect order, at much less expence than by means of hand labour, either by the hoe, or digging over in the summer season. The principal circumstance that requires to be attended to in the nidget management of hop-grounds is that of preventing the binds from being injured, by the tool coming too much in contact with the poles during the performance of the work.

Hop-oven, the name of a sort of oven or kiln in which the hops, after being separated from the binds, are stoved or dried by being exposed to proper degrees of heat under the direction of a person who has the exclusive management of the business. See OAST.

Hop-peeler, a term applied to a tool contrived for the purpose of forming the holes for setting the hop-poles in, in grounds of this kind; and which is a sort of strong iron crow, with a firm wooden handle placed crossways at the top, and made thick and tapering to a point at the bottom part, so as to readily remove the earth and make way for the insertion of the lower ends of the hop-poles, into the solid ground, in order to their standing firmly for the support of the binds.

Hop-picker, a term applied to the person who is employed in picking the hops from the binds, as soon as they are in a state of maturity for the purpose. Numbers of people are engaged in this sort of work in large hop-grounds.

Hop-poles, the name of the poles or strong stakes which are forced into the firm ground for the purpose of the hop binds climbing up and twisting round them, in order to their being supported and kept from trailing upon the ground. Poles of this kind are daily becoming more scarce and expensive. In the account of the rural economy of the southern counties of the kingdom, it is stated, that "the species of woods in use for hop poles are various. Formerly they depended much on the natural growth of the coppice woods of the country. But of late years, it has been the practice to make plantations for the especial purpose of hop poles."

They are asserted to be held in esteem by the planters of these districts, somewhat in this order :

| | |
|-----------------|---------------|
| 1st Chestnut, | 6th Maple, |
| 2d Ash, | 7th Oak, |
| 3d Sallow, | 8th Hornbeam, |
| 4th Red-willow, | 9th Beech. |
| 5th Birch, | |

Besides these the alder, or cawler, the brown willow, and some other similar sorts of light woods, make excellent hop poles.

It has been hinted, by an intelligent hop cultivator, that the hop, as well as other climbing plants, may have a predilection or choice of particular woods as supporters; and that a rough soft bark may be preferred by them, to one which is more smooth and polished. That of the maple is particularized, as its bark is peculiarly "soft and warm;" it being noticed that when the morning has been cold, the sensitive leader of a tender or fresh-poled vine has reclined its head against the velvet bark of the maple, while others held their's aloof, from chilly smooth barked poles. It is probable, that this may be a general law or ordinance of nature, among climbing plants, and may be essential to their preservation, exhibiting, in a most palpable way, "the perception and strength of vegetable instinct." These plants, it is likewise well known, have their instinctive choice or predilection with regard to the thickness of the articles of their support; being found to embrace with greater readiness a pole that is not of too great thickness, than one which is of much thickness towards the bottom part. The usual circumference of poles, at the butt-ends, may be rated at from about six to nine inches, tapering up to the top, where they are mostly about the size of a strong walking stick. The length is commonly about fifteen or twenty feet, but sometimes more different sorts of ground require poles of very different lengths. In the rich fertile hop grounds in the vicinity of Maidstone, in Kent, the poles of grown hops usually stand from about fourteen to sixteen feet above the surface of the hills, and have from eighteen inches to two feet below the surface of the ground. But on grounds of less strength, the poles are not found to rise more than ten or twelve feet in height. For this reason, a variation of the quality of the ground is beneficial, as the poles, by rotting and decaying at the bottom parts, become shorter, and, after a few years, get too short for strong vines in rich strong land. Yet it is not the custom for them to be sold or removed to less productive hop grounds for the support of vines which have an inferior growth and luxuriance.

In these districts it was found that the prices of hop poles varied, in 1790, from fourteen to forty shillings the hundred, in proportion to the size and quality of them; being commonly sorted under three divisions; *firsts*, *seconds* and *thirds*: but in 1797 they became considerably lower, "prime poles being then thirty shillings." They have, however, been constantly upon the advance since that period, and are at present become both extremely scarce and dear. The custom with the new poles is occasionally to have the bark shaved off, under the notion that it saves them from the worm; but some hop planters suppose that there is a warmth in the bark which is agreeable to the young vines; and though in two or three years the bark may drop off naturally, the surface of the wood, in the course of that time, has acquired a degree of softness. Allowing a hard, smooth polished pole to be unfriendly to the hop, it would obviously be improper to peel the poles.

In sharpening or pointing the bottom ends of hop poles, it is usual for the light short ones to be done in the hand without any support being required; but such as are tall and heavy stand in need of some sort of contrivance to keep them steady and upright. This is generally afforded by the simple contrivance of tying three poles of equal lengths together, at two or three feet distance from their tops, and then setting them up in the form of a sort of triangle. This receives the top of the pole which is to be sharpened between the points or horns of the triangle, and affords the necessary stay to it; there being a block of wood placed suitable below to work upon. It is common for this sort of labour to be performed on new as well as old poles, before they are *stacked* up or set in piles; though occasionally only just before the time of using them. It is usual, in pointing such poles as have been already in use, to strike off the portions which have stood in the ground where they appear much decayed, and point the sound parts above. But where such bottom parts continue firm and sound, they are re-sharpened for another crop.

The stacking up of the poles is a business that is best performed immediately after the picking of the hops has been finished. It is universally the practice, in the district of West Kent, to set up the poles in a kind of conical piles containing from two to five hundred each. This is effected by three stout poles of equal lengths, being bound together a few feet from their tops, and their legs spread out so as to stand firmly. This forms the support and stay of the pile while it is building, and afterwards; the poles being regularly dropped in on each side between the points of the three poles first set up, so as to be equal on every side, as on this the stability of the stack depends. The slope and diameter of the base of a pile is variable according to the length and number of poles which are set up together. A stack of three or four hundred of the long poles, met with about Maidstone, will take up a circle of near twenty feet in diameter. It should, however, be noticed, that the bottoms of the poles do not form one entire ring; but are collected into a sort of bundles or distinct parcels, mostly from three to six or eight in number; each portion being bound tightly together a few feet distant from the ground, by means of a strong band formed from the twisted vines, by which the wind is prevented from separating the poles; and at the same time the openings between the several parcels give passage to violent blasts, and prevent in some measure the piles from being wholly thrown down; an accident, however, which rarely occurs in such grounds as are tolerably screened. But, in high exposed situations, where quantities of these poles are often piled up for sale amongst the planters, it is no unusual thing for the piles to be blown down, to the utter destruction of sheep and other animals sheltering underneath them.

The continuance or lasting of hop poles depends greatly on the sort of wood which is in use and the time of its growth, as well as in some measure the quality of the soil, and the exposure in which it has grown. Chestnut poles of eighteen or twenty years growth, are in general esteemed the most durable of any. It has been confidently asserted, that a hop pole of this sort has been employed in a hop ground for upwards of thirty years; but the usual duration of poles is from about five to twelve years; or thereabouts. When the poles become no longer useful for the strong growing plants, they are mostly either transferred to those of less growths, or laid by for use in young plantations, being ultimately converted to the purposes of fire wood, or the making of charcoal for being mixed with the coke of coal in drying the produce. They are worth

about five or six shillings the hundred in each of these views.

The annual expence of poles, taking the new ones at thirty shillings, the number made use of at three thousand per acre, their duration eight years, and the value of the old refuse ones at five shillings the hundred, was formerly about five pounds the acre; but at present it is in all probability nearly, if not quite, double that sum. On account of this great expence of poles, and its chiefly arising from the decay of the parts inserted into the ground, and the mischief that frequently happens on their being broken off at the surface of the ground, in the time the crop is ripening, it would seem to be a desirable object to prevent the destruction of that part as much as possible. In order to effect this, *charring* the parts has been recommended as a desirable plan, especially those parts which are exposed between the air and moisture close to the surface of the ground, as the decay generally commences in these places the first. See *CHARRING Posts*.

HOP-shim, the name of an implement of the shim kind used in hop-grounds, and constructed with a strong frame, somewhat in the way of the common wheel-barrow, having feet or teeth which cut up or drag out all such weeds as may infest the land, while they break it down and render it fine at the same time. According to the Report of Kent, this is a sort of tool that may be also beneficially employed in clearing summer fallows from weeds. When properly constructed it costs about a couple of guineas. It has great power in working-over land when well managed. See *SHIM*.

HOP-tree. See *HOLLY*.

HOP-trefoil, a common name often applied to a plant of the trefoil kind, and sometimes to that of hop-clover. See *TREFOIL*.

HOP, Wild. See *Shrub TREFOIL*.

HOPE, in *Ethics*, is the desire of some good, attended with a belief of the possibility, at least, of obtaining it, and enlivened with joy, greater or less, according to the greater or less probability of our possessing the object of our hope. Alexander, preparing for his Asian expedition, distributed his hereditary dominions among his friends; allotting to some villages, to others boroughs, to others cities; and being asked what he had reserved for himself, replied, *Hope*.

Pindar, as cited by Plato (*De Repub.* l. 5.) calls hope the nurse of old age. It was virtue, according to Cicero, that inspired the hope of immortality, and that same immortality animated hope. There is nothing melancholy, says he, (*De Senect.* c. 1.) in death, which leads to immortality. The heathens deified hope. Cicero (*De Leg.*) speaks of one of the temples of this goddess. Livy mentions that which stood in the market for herbs, and of another which Publius Victor erected to her in the seventh region. M. Fullius, the censor, erected another to her near the Tiber. The Greeks also worshipped this divinity under the appellation *Ελπίς*, *Elpis*. Hope is represented upon some ancient monuments, but oftener upon the medals of the emperors, sometimes with these words, "Spes publica," "Spes populi Romani;" sometimes with a cornucopia, or with flowers and fruits, or a bee-hive. We find her often with one hand resting upon the altar, which M. Aurelius Pacorus dedicated to her. As she had her temples and altars, she had also, without doubt, her sacrifices; but antiquity gives us no account of the victims that were offered to her.

HOPE, in *Geography*, a river of Jamaica, which runs into the sea; five miles S. of Kingston.—Also, a large bay at the N.E. corner of Nootka sound, between "Point Breakers," N. lat. 49° 15'. E. long. 233° 20', and "Woody Point,"

N. lat. 50°. E. long. 232°.—Also, a bay in the English channel, on the coast of Kent, between Sandwich and Ramsgate.—Also, a harbour on the W. coast of Quadra and Vancouver's island, in the N. Pacific ocean.—Also, a small island near the coast of Rhode island, in America.—Also, two small islands, near the N.E. coast of New Holland, so called by captain Cook, when his ship was rescued from its imminently perilous situation off cape Tribulation. S. lat. 15° 41'. W. long. 214° 36'.—Also, a Moravian settlement in Wachovia, North Carolina, in Surry county, where the united brethren have a meeting.—Also, a township in the county of Durham, Upper Canada, W. of Hamilton, and fronting lake Ontario.

HOPE's Advance Bay, a bay in Hudson's strait; 100 miles W. of Chidley.

HOPE's Nose, a cape in the English channel, on the coast of Devonshire. N. lat. 50° 28'. W. long. 3° 27'.

HOPEA, in *Botany*, so named by Dr. Garden, and adopted by Linnæus, in honour of their mutual friend the late Dr. John Hope, professor of botany at Edinburgh, who died in 1786. This gentleman richly deserves commemoration, as being one of the earliest lecturers on the vegetable physiology, as well as an experienced practical botanist. Those who knew his personal merits, will readily accede to any thing that may serve to embalm so worthy a name. The genus originally chosen for this purpose has proved unfortunate, being now, justly we believe, referred by l'Heritier to *Symplocos*. See *Tr. of Linn. Soc.* v. 1. 176, and Willd. *Sp. Pl.* v. 3. 1436. It is singular that the Linnæan *Alstonia*, named by Mutis after Dr. Hope's predecessor, should have precisely the same fate, being also a *Symplocos*. We are therefore obliged to admit as *Hopea* a little inconsiderable East Indian plant, which Willdenow and Vahl have so denominated, though we are by no means satisfied of its being distinct from *Exacum*. Dr. Buchanan had destined the *Dipteropermium* of the younger Gærtner to commemorate his friend and preceptor, and it is much to be wished that so fine a genus had been adopted as *Hopea*.—Vahl. *Enum.* v. 1. 3. Willd. in *Nov. Act. Soc. Amic. Hist. Nat. Berol.* v. 3. 435. *Vahl*.—Class and order, *Monandria Monogynia*. Nat. Ord. *Rotaceæ*, Linn. *Gentianeæ*, Juss.

Gen. Ch. *Cal.* Perianth inferior, in four deep, lanceolate, spreading, equal segments. *Cor.* of one petal, funnel-shaped; tube short inflated; limb in four equal, spreading, or reflexed, ovate segments. *Stam.* Filaments two, inserted into the tube, very short, linear, opposite, one of them shortest and barren; anther solitary, globose, two-lobed. *Pist.* Germin superior, roundish; style cylindrical, very short; stigma capitate, globose. *Peric.* Capsule roundish, of two valves and one cell. *Seeds* numerous, minute.

Ess. Ch. Calyx in four deep equal segments. Corolla of one petal, funnel-shaped, four-cleft, equal. One barren stamen. Capsule with two valves, one cell, and many seeds.

1. *H. dichotoma*. The only species gathered by the Rev. Dr. Rottler at Tranquebar. We have never seen a specimen, but a drawing communicated by Lieut. Col. Hardwicke, as the *Exacum pusillum* of Roxburgh, answers so well to the description in Vahl, that we have no doubt concerning it. This is a small, smooth, pale, annual, fibrous-rooted plant, flowering in December. The stem is from one to three inches high, branched, forked, leafy, slender, square, with membranous angles. Branches alternate or opposite, spreading. Leaves opposite, sessile, small, acute, entire, three-ribbed; the lower ones ovate, upper ones gradually narrower, and uppermost awl-shaped. Flower-stalks very short, solitary in the forks of the branches, three together at the extremities. Flowers small, yellow, with a pale tube. Seeds red.

If the capsule be really of one cell, and the stamens constantly two, one of them barren, this plant may possibly constitute a good genus; but in our drawing the capsule appears of two cells, and on the whole we are more disposed to think it an *Exacum*, notwithstanding the peculiarity of the stamens.

HOPEWELL, in *Geography*, a township of America, in Cumberland county, New Brunswick, on Chepodil river, which runs into a northern arm of the bay of Fundy, and is navigable for four or five miles.—Also, the name of three townships in Pennsylvania; viz. in York, Huntingdon, and Washington counties.—Also, a township in Hunterdon county, New Jersey, on Delaware river, 14 miles W. of Princeton, and 11 above Trenton. In 1790 it contained 2320 inhabitants.—Also, a township in Cumberland county, New Jersey.

HOPEWELL Head, a cape in Hudson's bay. N. lat. 58° 10'. W. long. 78°.

HOPFGARTEN, a town of Germany, in the archbishopric of Salzburg; 38 miles S.W of Salzburg.

HOPITAL, L', a town of France, in the department of Mont Blanc, and chief place of a canton, in the district of Chambéry. The place contains 662, and the canton 8346 inhabitants, on a territory of 157½ kilometres, in 15 communes.—Also, a town of France, in the department of the Rhône and Loire; 17 miles S. of Roanne.—Also, a town of France, in the department of the Lot; 24 miles N.E. of Cahors.

HOPKINS, JOHN, in *Biography*, one of the principal versifiers of the psalms at the time of the Reformation, with Sternhold. These were the fathers of metrical psalmody in our country, equally injurious to the divine poetry of the psalmist, and to the composition of sacred music. The melodies to which these versions are sung, were chiefly German. See PSALMODY.

HOPKINS, EZEKIEL, was born at Sandford, in Devonshire, about the year 1633. In 1649, he became a chorister of Magdalen college, Oxford, and after he had taken his degree of B.A. in 1653, he was appointed usher of the adjoining school. In 1669, he went to Ireland as chaplain to lord Roberts, afterwards earl of Truro, who was appointed lord lieutenant. He married his lordship's daughter, and was made dean of Raphoe. Upon his return to England, lord Roberts recommended him so strongly to his successor lord Berkley, that, in 1671, he was consecrated bishop of Raphoe, from which see he was translated, in 1681, to that of Londonderry, where he continued till the war which broke out between the supporters of the revolution, under king William, and the partisans of king James, headed by the earl of Tyrconnel, when he retired to England. He was now chosen minister of Aldermanbury, where he shortly after died, at the age of fifty-seven. After his death, his posthumous works were published in one volume folio. His most valuable piece is "An Exposition of the Lord's Prayer," first printed in 4to. in 1692, to which were afterwards added sermons on Providence, and the advantage of reading and studying the holy scriptures. Gen. Biog.

HOPKINS, WILLIAM, a learned divine of the church of England, was born at Monmouth in the year 1706. He received the elements of a learned education at his native town, whence he was sent to All-Souls, Oxford, in the year 1724. He was admitted to deacon's orders in 1728, and in the following year undertook the curacy of Waldron, in Suffex. In 1731, he was presented to the vicarage of Bolney, in the same county. In 1753, he published anonymously, "An Appeal to the Common Sense of all Christian People, more particularly the Members of the Church of England, with regard to an important Point of Faith and Practice, imposed upon their Consciences." This piece ex-

cited much attention, and created no little alarm among the believers in the doctrine of the Trinity. Many answers were written, but at length Dr. Thomas McDonnell wrote an octavo volume against the principles contained in the "Appeal," to which Mr. Hopkins replied. The controversy was carried on many years, and our author published other tracts on the same subject. In 1756, he was elected master of the grammar school of Cuckfield, without any other conditions than that of taking the oaths to government. In the year 1766, Mr. Hopkins undertook the curacy of Slaugham, and continued to officiate there many years, and in his own parish of Bolney, upon what he judged to be the gospel plan. He was an active and zealous promoter of a petition to parliament for relief, in the matter of subscription to the liturgy and thirty-nine articles of the church, and put forth some able works in defence of the cause. The last piece which he sent to the press was "Exodus, a corrected Translation, with Notes critical and explanatory." This was in the year 1784; almost immediately after this, Mr. Hopkins's health began to decline, and his mental faculties were greatly impaired before his decease, which happened in 1786, when he had attained to his eightieth year. Mr. Hopkins was an Arian in his religious faith, and admitted the lawfulness of praying to Jesus Christ, but he could not join in the invocations to him as being himself God. Mr. Hopkins was possessed of great knowledge in the original languages of the scriptures, and was a most diligent student in theology.

HOPKINS, or *Hopkinsville*, in *Geography*, a township of Caledonia county, in Vermont.

HOPKINTON, a township of Middlesex county, Massachusetts, incorporated in 1715, and containing 1372 inhabitants. The rivers Concord and Providence receive each a branch from this township; and these streams furnish seats for seven or eight grist-mills, a number of saw-mills, iron-works, &c.—Also, a township in Washington county, Rhode island, on the W. line of the state, on several branches of Pawcatuck river; containing 227 inhabitants.

HOPLITES, HOPLITÆ, formed of ἔπλον, *armour*, in *Antiquity*, were such of the candidates at the Olympic and other sacred games as ran races in armour.

One of the finest pieces of the famous Parrhasius, was a painting which represented two hoplites; the one running, and seeming to sweat large drops; the other laying his arms down, as quite spent, and out of breath. Pliny, lib. xxxv. cap. 10. and Pausan De Coronis, lib. vi. cap. 14.

HOPLITIS LAPIS, in *Natural History*, a name given by some of the writers among the ancients to a stone of a shining brass-like appearance, looking like the surface of a polished brass armour worn in those times. It is easy to conclude, from this account, that the hoplites was one of our mundics.

HOPLITODROMOS, formed of ἔπλον, *armour*, and δρεμων, *I run*, in the ancient gymnastic sports, a term applied to such persons as went through those toilsome and robust exercises, in complete armour; by which the exercise became much more violent, and the wearing of armour, in the time of battle, much more easy.

HOPLOCHRISMA, a term used, by the ancient writers in *Medicine*, for the anointing a sword, or other weapon, with which a person had been wounded, in order to the curing of the wound; so early was the idle notion of curing by sympathetic remedies received into the world. Some late authors have also used the word in a very different sense, namely, for the anointing the points of darts or swords with poisonous ingredients in order to render the least

least wound given with them fatal; a practice most known, as it is said, among the savage inhabitants of America.

HOPLOMACHI, ὀπλομαχοί, composed of ἔπλοοι, *armour*, and μάχομαι, *I fight*, in *Antiquity*, were a species of gladiators, who fought in armour; either completely armed from head to foot, or only with a casque and cuirass.

HOPPER, a vessel wherein feed-corn is carried at the time of sowing.

The word is also used for that wooden trough in a mill, into which the corn is put to be ground.

HOPPET, in *Mining*, is a small hand-basket or whisket used for holding and carrying ore, &c. It also means a square or oblong dish or box of wood, narrowest at the bottom, holding 14 or 16 pints, which is used, level full, in the measuring of lead ore by the bar-masters, in the low and high peaks or hundreds of Derbyshire.

HOPPLE, a term applied to different animals, as the horse, sheep, &c. which signifies the fettering or restraining of them, by tying their two fore legs together with a short strong ligature or band of some sort or other.

HOPTON, ARTHUR, in *Biography*, an English mathematician, was son of sir Arthur Hopton, and born in Somersetshire. He was educated at Lincoln college, Oxford, and after taking his degree of B.A., removed to the Temple, where he lived in habits of friendship with the learned Selden. He died in 1614, a very young man, not having attained to more than his twenty-sixth year. He wrote a treatise on the "Geodetical Staff"; "The Topographical Glass, containing the Uses of that Instrument, the Theodolite, Plane Table, and Circumferentor"; "A Concordance of Years, containing a new and a most exact Computation of Time, according to the English Account"; "Prognostications for the Year 1607 and and 1614."

HOPTON, SUSANNA, an ingenious lady, was descended from an ancient family in Staffordshire, and was born in 1627. In her youth she was drawn over to the church of Rome, but subsequent enquiry restored her to the Protestant communion. She died at Hereford in 1709; as an author, she is known by several books on practical piety, and by an hexameron or meditations on the six days of the Creation, &c.

HOQUETUS, HOCHETUS, or *Hocetus*, a term used in the old Latin tracts, and in the censures of music by the heads of the church and grave divines, seems to imply a fantastical division, which by the sudden leaps and breaks, or discontinuity of voice, resembled a hiccup, in French *hoquet*. "They intersect the melodies with hoquets, slide about in discant, and sometimes even crowd and load the chants with vile third and fourth parts, triplis et motetis vulgaribus."

HOR, in *Scripture Geography*, a mountain of Arabia Petraea, on the confines of Idumæa. Here Aaron died and was buried. See AARON.

HORACE, QUINTUS HORATIUS FLACCUS, in *Biography*, one of the most celebrated of the Roman poets, was born at Venusium in the year 65, B.C. His father was the son of a freed-man, and followed the employment of a tax-gatherer; but notwithstanding the meanness of his origin, he felt the importance of a good education, the advantages of which he resolved his son should enjoy. He accordingly took him to Rome, and caused him to be instructed in all the branches of knowledge which were taught to young people at that time. At the age of eighteen he was sent to Athens for the purpose of pursuing philosophy and Greek literature, which was become fashionable among the Romans. While he was in that city he was noticed by Brutus, who took him into his army and made him tribune; but Horace was more distinguished by his wit than illustrious for his valour, and at the battle of Philippi he is said to

have thrown away his shield and fled. He was now reduced to great difficulties, even to a state of indigence, having nothing to depend on but his literary talents. He recommended himself to Virgil, who obtained for him the patronage of Mecænas. To this patron of letters he rendered himself so agreeable that he made him his familiar companion, and took him to Brundisium, in that journey which he has so well described in verse. Mecænas procured from Augustus the restitution of Horace's estate, which he had forfeited by the part that he took in the war under Brutus, and introduced him to the emperor, who became greatly attached to him, and would have made him his private secretary, but the poet declined this high honour, preferring the independence of a private life to the business of a court. Having no ambitious views, and detesting parade and splendour, he determined to remain his own master. In the latter part of his life he retired to the country, where he indulged himself in philosophical ease, which he has admirably described in his odes. He died eight years before the Christian era, and was buried near his friend and patron Mecænas, whose death is said to have hastened his own. He appears to have had many friends among persons of rank, whom he addressed with easy familiarity, and he was ready to do friendly offices in the way of advice and recommendation. No ancient writer has been so popular as Horace: the variety of his manner, and of the subjects treated of, has rendered him the favourite of the most different tastes. His odes are models of that kind of composition in the Latin language. His *Epistles* and *Satires* abound in moral maxims expressed with vigour; in acute observations on human life, and in pleasant stories related with ease and vivacity. The *Art of Poetry* displays much sound sense and good taste, but the precepts contained in it are desultory and without method. The best editions of this author are those of Lips. 1752; and of Glasgow in 1744: but the impressions of Horace are so numerous as to defy enumeration. The translation by Francis is highly esteemed.

HORADADA, in *Geography*, a river of South America, which runs into the Caribbean sea; 50 miles E. of Cape Aguja.

HORADNIC, a town of Austrian Poland, in Galicia; 60 miles N.W. of Zydomiers.

HORÆA, Ὥραια, in *Antiquity*, solemn sacrifices, consisting of fruits, &c. offered in spring, summer, autumn, and winter, that heaven might grant mild and temperate weather. These, according to Meursius, were offered to the goddesses, called Ὥραι, i. e. *Hours*, who were three in number, attended upon the sun, presided over the four seasons of the year, and had divine worship paid them at Athens. Potter, Archæol. Græc. lib. ii. cap. 20, tom. i. p. 430.

HORAIDAN, in *Geography*, a town of Persia, in Farsistan; 84 miles N.W. of Schiras.

HORAPOLLO, or HORUS APOLLO, in *Biography*, an Egyptian grammarian, who taught first at Alexandria, and afterwards at Constantinople in the time of Theodosius. There remain of his, two books on the Egyptian Hieroglyphics, printed by Aldus in Greek, in 1505. They were afterwards translated into Latin, and several times reprinted. The best edition is that of de Pauw, Gr. and Lat. with notes, Utrecht, 1727, 4to.

HORARY, something relating to *hora*, *hours*. See HOUR.

HORARY Circle of the globe. See CIRCLE.

HORARY Circles. See HOUR-CIRCLES and CIRCLE.

HORARY Circles, or *lines*, in *Dialling*, are the lines or circles which mark the hours on sun-dials.

HORARY Motion of the earth, is the arc it describes in the space of an hour.

This is nearly fifteen degrees; for the earth completes its revolution through 360° in a day, or twenty-four hours, and the twenty-fourth part of 360 is 15 ; though this is not the exact measure of the horary arc, because the earth moves with different velocity, according to its greater or lesser distance from the sun; but it is near enough for ordinary computations. See *EQUATION of time*.

HORATII, in *Biography*, the name of three brothers who distinguished themselves in the Roman history, and who fought against the three Curatii of Alba in the year 667 B.C. Two of them were slain, but the third slew all his antagonists. On his return to Rome he met his sister, who had been betrothed to one of the Curatii, and reproaching him for what he had done, he slew her also. His great services to his country were considered as an extenuation of his crime. *Univer. Hist.* See *CURIATII*.

HORAWER, in *Geography*, a town of Hindooftan, in Bahar; 42 miles S.W. of Arrah.

HORAZDIOWITZ, a town of Bohemia, in the circle of Prachatiz, situated on the river Ottawa; 22 miles N.W. of Prachatiz.

HORB, a town of Germany, in the county of Hohenberg, situated on the Neckar, having a considerable trade in woollen goods; 28 miles S.W. of Stuttgart.

HORB, a town of Sweden, in the province of Skone; 24 miles S.W. of Christianstad.

HORCA, a river of Sweden, rising in the mountains bordering on Norway, and running into the Regunda at Lit, in Jamtland.

HORCAJADA, a town of Spain, in the province of Leon; 40 miles E. of Ciudad Rodrigo.

HORCAJO, a town of Spain, in New Castile; 27 miles S.S.W. of Hueta.

HORCAN, a mountain of Grand Bukharia, S. of Balk.

HORCUS LAPIS, the name of a stone mentioned by the writers of the middle ages as useful in folding silver and other metals. All the description they give of it is, that it was black, and was easily reduced to powder. It was called also catemia.

HORD, **HORDA**, a Tartarian term, and literally denoting a *multitude*, in *Geography*, is used for a company or tribe of wandering people, which have no settled abode or habitation, but stroll about, dwelling in chariots, or under tents, to be ready to shift as soon as herbage, fruits, and the present province is eaten bare.

HORD is more properly the name which the Tartars, who inhabit beyond the Wolga, in the kingdoms of Astracan and Bulgaria, give to their villages.

A **hord** consists of fifty or sixty tents ranged in a circle, leaving an open place in the middle. The inhabitants of each hord usually form a military company or troop; the eldest whereof is commonly the captain, and depends on the general or prince of the whole nation.

HORDEATEM, a liquid medicine, made of barley, boiled till it bursts.

Sometimes other ingredients are added, as the cold seeds, almonds, and the like.

HORDEOLUM, or **STYE**, signifies, in *Surgery*, a small tumour situated upon the edge of the eye-lid, and seldom exceeding a barley corn in size, from which last circumstance the former appellation has been derived. According to Scarpa, styes originate particularly, often towards the inner canthus. A swelling of this sort is very circumscribed, and presents itself either in an inflamed, or a suppurating state,

or else as a mere indurated tumour, unaccompanied by inflammation.

An inflamed stye is commonly very red and painful, and bears a close resemblance to a little boil, or an inflamed encysted tumour. Richter suspects, that a stye is sometimes one of the glands of Meibomius in a state of inflammation. The disease is in general quite of a local nature, although the circumstance of some persons being particularly often troubled with the complaint has given rise to suspicions of there being occasionally a constitutional or internal cause. Both Richter and Scarpa concur in imputing the frequency of styes in particular subjects to a foul disordered state of the alimentary canal, induced by improper food, the abuse of spirits, &c. We will not pretend to decide concerning the truth of this statement, nor about the connection, which the first of these writers describes, as occasionally existing between the menfes, the cure of the tinea capitis in children, &c. and the origin of styes.

The cure of an inflamed stye requires the employment of external emollient applications, or such as promote suppuration. The tumour always suppurates, and the sooner it is made to do so, the more quickly is the patient freed from all inconvenience. Attempts to disperse the swelling are, for the most part, unavailing, or if the inflammation is resolved, the stye is still left in an indurated state. When the tumour has already suppurated, it is also advisable to persist in the use of emollient remedies, and promote the discharge until all the hardness is removed. An exceedingly troublesome induration is apt to remain when the suppuration has been checked too soon, especially if the stye has been of large size. After the suppurative stage, a weak solution of acetite of lead will commonly serve for the dispersion of the remaining redness and swelling.

The indurated stye is usually nothing more than the remains of one, that has passed through the inflammatory stage, the suppuration having either been checked too soon, or prevented altogether by means put in practice for the resolution of the inflammation. The tumour becomes a cause of serious annoyance, partly because it often falls into a painful inflamed state, and partly because it obstructs the motions of the eye and eye-lids. It is even alleged, that the indurated stye may assume a malignant character, whence the swelling has been sometimes called scirrhus. Richter states, that in this stage emollients and other applications do no good, and he advises the surgeon to wait till the tumour spontaneously inflames, when suppuration is to be excited by some stimulating dressing, and kept up until the hardness subsides. Perhaps it is preferable (and we prefer the plan) to dip the point of a camel hair pencil in sulphuric acid, and touch the stye with it a few times, until the cure is effected.

Scarpa has made some excellent observations on this disease. Among other things, we learn from him, that the inflammation of the stye, like that of boils, has a tendency to destroy a part of the cellular membrane, which is the reason why the tumour can hardly ever be completely resolved. He states, that resolution can only be accomplished, when the inflammation is confined to the skin, a case where cold applications, especially ice, may prove successful. But when any of the cellular membrane is destroyed, Scarpa recommends the bread and milk poultice, which is to be changed very often. When a white point makes its appearance on the apex of the tumour, this author disapproves of being in a hurry to let out the small quantity of serum which lies between the skin and spongy cellular membrane. He prefers waiting till the skin has become as thin as possible, and breaks of itself, so as to give vent not only to the serous fluid, but also to the dead cellular substance, which constitutes

tutes the chief part of the disease. When the contents are flow in making their escape, Scarpa advises pressing them out.

Should a portion of sloughy matter remain in the swelling a long while undetached, this eminent surgeon recommends touching the inside of the itye with sulphuric acid a few times, by means of a camel-hair pencil.

HORDEUM, in *Botany*, an ancient Latin name, of whose meaning or etymology we find no account or conjecture worth transferring. Barley.—Linn. Gen. 39. Schreb. 54. Willd. Sp. Pl. v. 1. 472. Mart. Mill. Dict. v. 2. Sm. Fl. Brit. 155. Juss. 32. Tourn. t. 295. Lamarck. Illustr. t. 499. Gærtn. t. 81.—Class and order, *Triandria Dignia*. Nat. Ord. *Gramina*.

Gen. Ch. *Common Receptacle* elongated into a spike, jointed, brittle, compressed. *Cal.* Glumes lateral, three together, each of two narrow, pointed valves, containing one sessile flower. *Cor.* of two valves; the lower one swelling, angular, ovate, pointed, longer than the calyx, ending in a long straight awn; the inner valve lanceolate, flat, smallest. *Stam.* Filaments three, capillary, shorter than the corolla; anthers oblong. *Pist.* Germen turbinate, somewhat ovate; styles two, villose, reflexed; stigmas feathery. *Peric.* none, except the permanent corolla, falling off with and containing the seed. *Seed* oblong, swelling, angular, pointed at each end, above marked with a longitudinal furrow.

Obf. In some species all the three flowers are perfect in all their parts, and fertile; in others the lateral ones are male, the central one only being hermaphrodite and fertile.

Ess. Ch. *Common receptacle* toothed and excavated. *Calyx* lateral, ternate, two-valved, single-flowered.

The species of *Hordeum*, ten in Willdenow, may be divided into such as come under the popular denomination of corn, and such as are generally reckoned grasses. The former are four; the latter six, and these last are of little or no value, but rather detrimental to the farmer.

H. vulgare. Linn. Sp. Pl. 125. Ehrh. Pl. Off. 421. Lob. Ic. 28. (*H. polytrichum vernum*; Ger. em. 70.)—Flowers all perfect, awned; two of the rows more erect than the rest.—This is our common cultivated Barley, said to have been found wild in Sicily and Russia. It is annual. The flowers and seeds are disposed indistinctly in several rows, with very long, compressed, rough awns. There is a supposed variety, termed *Hordeum cæleste*, in which the husk, or corolla, does not stick to the seed; and another with black seeds, said by Willdenow to be biennial.

H. hexastichum. Linn. Sp. Pl. 125, has six rows of seeds; *H. distichum*, *ibid.* but two. The latter is figured in Ger. em. 70. f. 1. It is much to be doubted whether these are more than varieties.

H. Zeocriton. Linn. Sp. Pl. 125. Schreb. Gram. t. 17. Ehrh. Herb. Exsic. 13; has two rows of more crowded, spreading, and longer seeds, which give it a peculiar aspect.

Of the grassy species are

H. murinum, so called from *mus*, *muris*, a mouse, and not from *murus*, a wall, though it is usually named Wall Barley in English, is very common by way-sides. See its figure in Curt. Lond. fasc. 5. t. 9. Mart. Rust. t. 43. Engl. Bot. t. 1971.

H. pratense. Mart. Rust. t. 108. Sm. Rel. Rudb. 12. f. 1. Engl. Bot. t. 409, is known from the last by its perennial root, taller upright stem, and by having all the calyx-glumes narrow and brittle-shaped.

H. maritimum. Mart. Rust. t. 44. Knapp. t. 106. Engl. Bot. t. 1205. (*H. marinum*; Hudf. 57.)—A sea-side grass, very curiously distinguished by Hudson from *H. mu-*

rinum by the internal glumes of the lateral flowers being dilated and half ovate. It is also a more glaucous and smoother plant, with more compact spikes. Curtis confounded it with *murinum*, and yet mentions it as known by the name of Squirrel-tail grass in the Isle of Thanet, where it is found very pernicious, by sticking into the gums of horses, and rendering them so sore as to prevent the animal's feeding.—These three are the only British species of *Hordeum*; the second of them, *pratense*, is the *nodosum* of Linnæus, but he quotes for it a synonym of Dillenius in Ray's Synopsis, t. 20. f. 2, which belongs to *Alopecurus bulbosus*.

H. bulbosum. Linn. Sp. Pl. 125. Sm. Prodr. Fl. Græc. Sibth. v. 1. 73. Fl. Græc. t. 98, a native of the Levant, has been by some confounded with the Linnæan *nodosum*, but is a larger and very distinct species. This is *H. strictum*, Desfont. Atlant. v. 1. 113. t. 37; and is also well figured in Barrel. Ic. t. 112. f. 2.

For the culture and produce, &c. of barley, see **BARLEY**. For the regulation of the price, see **CORN**.

HORDICALIA, or **HORDICIDIA**, in *Antiquity*, a religious feast held among the Romans, wherein they sacrificed cattle big with young.

The word hordicidia is formed of *horda*; which Festus explains by *prægnans*, *pregnant*; and *cædo*, *I sacrifice*. Ovid, in his Fasti, lib. iv. ver. 631. describes *hordâ* or *forda*; to be *bos prægnans*; of $\zeta\omicron\sigma\omicron$; *gravidâ*.

This feast fell on the fifteenth of April; on which day they sacrificed thirty cows, big with calf, to the goddess Tellus, or Terra, Earth: some of them were sacrificed in the temple of Jupiter. The calves taken out of their bellies were burnt to ashes first, by the pontifices; afterwards by the eldest of the vestal virgins.

Alexander ab Alexandro, Genial. Dier. writes *hordalis dies*; and from him, some of the moderns call the feast *hordalia*; but Varro writes it *hordicalia*, and Festus, *hordicidia*.

HORDY, in *Geography*, a town of Hindoostan, in Dowlatabad; 28 miles N. of Darore.

HOREB, in *Scripture Geography*, a mountain of Arabia Petræa, so near to mount Sinai that Horeb and Sinai seem to be two eminences of the same mountain. Sinai lies east, and Horeb west; so that when the sun rises, the latter is covered with the shadow of Sinai. On Horeb there are springs and fruit-trees, but only rain-water on Sinai. At Horeb God appeared to Moses in the burning-bush. (Exod. iii. 1, 2, 3.) At the foot of this mountain Moses struck the rock, and drew water from it. (Exod. xvii. 6.) Elijah retired hither to avoid the persecution of Jezebel. (1 Kings, xix. x.) It is frequently said that God gave the law at Horeb, though in other places Sinai is named; because Horeb and Sinai formed, as it were, one and the same mountain.

HOREHOUND, in *Botany*. See **MARRUBIUM**.

HOREHOUND, *Common white, Marrubium vulgare*, in the *Materia Medica*, is a plant which grows near the sides of roads and rubbish, and flowers in June. The leaves have a moderately strong smell of the aromatic kind, but not agreeable; which is improved by drying, and by keeping for some months in a great part dissipated; their taste is very bitter, penetrating, diffusive, and durable in the mouth. The dry herb gives out its virtue both to watery and spirituous menstrua. The remaining extract, after inspissating the watery infusion, proves a strong bitter, without flavour; and that of the spirituous infusion is less in quantity, but of more penetrating bitterness. This plant is the $\mu\epsilon\tau\epsilon\omicron\iota\omicron\nu$ of the ancients, who have extolled it much for its efficacy in removing obstructions of the lungs and other viscera: It has been chiefly employed in humoural asthmas, obstinate coughs, and pulmonary

pulmonary consumptions; instances also occur of its beneficial use in scirrhus affections of the liver, jaundice, cachexies, and menstrial suppressions. However, though horehound possesses some share of medicinal power, as may be inferred from its sensible qualities, its virtues do not appear to be clearly ascertained, and it is now rarely prescribed by physicians. A dram of the dry leaves in powder, or two or three ounces of the expressed juice, or an infusion of half an handful of the fresh leaves, have been directed for a dose. The last mode is usually practised by the common people, who still recur to it as a favourite remedy in coughs and asthmas. Taken in considerable quantities, it is said to loosen the body. Although, says Cullen, it has had the reputation of a pectoral, its virtues, in many trials, have not been observed, and in several cases it has been judged hurtful. Lewis Mat. Med. Woodv. Med. Bot.

HOREHOUND, *Bafe*, in *Botany*. See STACHYS.

HOREHOUND, *Bastard*. See SIDERITIS.

HOREHOUND, *Black*, or *Stinking*. See BALLOTE.

HOREHOUND, *Stinking marsh bastard*. See GLECHOMA.

HOREHOUND, *Water*. See LYCOPUS.

HOREM, in *Scripture Geography*, a city of Naphtali. Josh. xix. 38.

HORESTI, in *Ancient Geography*, a people of Scotland, mentioned by Tacitus, in Agricola's time, the inhabitants of Angus, but probably incorporated with, or subdued by, the Vacomagi, before Ptolemy wrote his geography.

HORGEN, in *Geography*, a town of Switzerland, in the canton of Zurich; 10 miles S.S.E. of Zurich.

HORIA, in *Entomology*, a Fabrician genus of coleopterous insects, possessing the following character. The antennæ are moniliform; feelers four, thicker towards the tip; lip linear, and rounded at the end.

The body of the horia is long and cylindrical; the head large and inclined, scutell small and triangular; wing-cases coriaceous and flexible; wings membranaceous, and all the feet armed with four claws. The horiæ are allied to the cantharis, mylabris, and meloe genera, and also to the new genera cucujus and lymexylon. The genus was first established in the Fabrician Mantissa Insectorum for the reception of the Linnæan cantharis demestoides, that insect being esteemed distinct from the cantharides. His horia demestoides, for that is the name under which it appears in the work above mentioned, was afterwards assigned to the lymexylons (see Ent. Syst.), and the same generic name given to another family; that denominated horia by later writers. The genus horia, thus established, contains only two species, one of which (testacea) Fabricius had himself described in his Mantissa, under the title of cucujus flavipes, and the other is the cucujus maculatus of professor Swederus, an account of which is inserted by that author in the Transactions of the Royal Society of Stockholm.

Horia is a genus adopted by Olivier, who describes the species maculata. Latreille, however, seems to think the two Fabrician species are not generically the same, the head and thorax in one being much larger in proportion to the rest of the body in the species maculata than testacea. Upon this opinion, suggested by Latreille, it is remarked by Olivier that we are not at present sufficiently acquainted with the structure of the mouth, to speak with certainty, and he himself forbears from offering any opinion; and we further observe that in the latest publication of Latreille, he admits the first at least of the Fabrician species under the generic name of horia. The transformations of the insects of this family are entirely unknown.

Species.

MACULATA. Yellowish; wing-cases with seven black spots. Fabr. *Horia maculata*, Olivier. *Cucujus maculatus*, Swederus.

Length about an inch and a half. The species inhabits South America.

TESTACEA. Rufous; antennæ and legs black. Fabr. Native of Tranquebar. The posterior thighs of the male insect thick.

HORJA, in *Geography*, a town of Sweden, in the province of Schonen, 22 miles N. of Christianstadt.—Also, a town of Sweden, in West Gothland; 20 miles N.N.W. of Jonkioping.

HORITES, in *Scripture Geography*, an ancient people, who dwelt in the mountains of Seir, beyond Jordan, Gen. xiv. 6. They were powerful, and had princes of their own, before Esau conquered their country. Afterwards they and the Edomites seem to have formed one people. They dwelt in Arabia Petræa and Arabia Deserta, S.E. of Judæa. Deut. ii. 1. xxiii. Judg. v. 4. The Hebrew חֹרִיטִים, Chorim, translated Horites in Genesis, is used appellatively in other passages of scripture, to denote heroes, or great and powerful men; and probably the Greeks derived from this term their heroes, as they derived *anax*, a king, from the sons of Anak. See 1 Kings, xxi. 8. 11. Neh. ii. 16. iv. 14. v. 7. vi. 17. vii. 5. xiii. 17. Eccl. x. 17. II. xxxiv. 21.

HORIZON, or HORIZON, in *Astronomy*, a great circle of the sphere, dividing the world into two parts, or hemispheres; the one upper, and visible; the other lower, and hid.

The word is ἡριζων, which literally signifies bounding, or terminating the sight; being formed of ἡριζω, termino, definio, I bound, I limit; whence it is also called *finitor*, *finisfer*.

The horizon is either *rational* or *sensible*.

HORIZON, *Rational*, *True*, or *Astronomical*, which is also called simply and absolutely the horizon, is a great circle, whose plane passes through the centre of the earth, and whose poles are the zenith and nadir. It divides the sphere into two equal parts or hemispheres.

Such is the circle H R (*Plate XVI. Astronomy, fig. 141.*) whose poles are the zenith and nadir; whence it follows, that the several points of the horizon are a quadrant distant from the zenith and nadir.

The meridian and vertical circles cut the rational horizon at right angles, and into equal parts.

HORIZON, *Sensible*, *Visible*, or *Apparent*, is a lesser circle of the sphere, as *hr*, which divides the visible part of the sphere from the invisible, and whose plane touches the spherical surface of the earth.

Its poles, too, are the zenith and nadir; and consequently, the *sensible* horizon is parallel to the *rational*; and it is cut at right angles, and into two equal parts, by the verticals.

The *sensible* horizon is divided into *eastern* and *western*.

HORIZON, *the Eastern*, or *Ortive*, is that part of the horizon wherein the heavenly bodies rise.

HORIZON, *the Western*, or *Occidial*, is that wherein the stars set.

HORIZON, in *Geography*, is a circle passing over the earth, and dividing the visible part of the earth and heavens from that which is invisible.

The altitude or elevation of any point of the sphere, is an arc of a vertical circle, intercepted between it and the sensible horizon.

This is peculiarly denominated *sensible* or *apparent* horizon, to distinguish it from the *rational*, or true, which passes

passes through the centre of the earth; as already observed.

These two horizons, though distant from one another by the semidiameter of the earth, will appear to coincide, when continued to the sphere of the fixed stars; because the earth compared with this sphere is but a point.

By *sensible* horizon is also frequently meant a circle, which determines the segment of the surface of the earth, over which the eye can reach; called also the *physical* horizon. In this sense we say, a spacious horizon; a narrow, scanty horizon.

It is evident, that the higher the eye is, the farther is the visible horizon extended. Thus, let *H b r R* (*Plate I. Geography, fig. 2.*) represent a part of the spherical surface of the earth; if the eye be at *A*, draw *A b* and *A r* tangents to the globe of the earth; and let one of these lines *A b*, the point *A* continuing immovable, be carried round, and in its revolution always touch the surface of the earth; the point *b* will touch the visible horizon, part of which is represented by the curve *b o r*. But if the eye be placed higher, as at *B*, the tangents *B H* and *B R* will reach farther, and the visible horizon will be larger, *viz.* *H O R*. The visible horizon is most accurately observed upon the sea, and is, therefore, sometimes called the *horizon of the sea*. In observing this horizon, the visual rays *A b* and *A r* will, on account of the spherical surface of the sea, always point a little below the true sensible horizon *S S*, and consequently below the rational horizon *T T*, which is parallel to it.

To find the depression of the horizon of the sea, below the true horizon, which varies with the height of the eye, and in a small degree with the variation of the refractive power of the atmosphere, see *DEPRESSION*.

The semidiameter of the earth, and the height of the eye being given, the extent of the visible horizon is thus found.

Let *A D E* (*fig. 3.*) be an arc of a great circle upon the earth, *C* the centre of the earth, *B* the eye of the observer, *B D* the height of the eye, *B A* and *B E* lines drawn from the eye, touching the surface of the earth at *A* and *E*, and terminating the visible horizon: in order to find *A D*, draw *C A*, and in the triangle *B A C*, right-angled at *A*, we have *C B* to *C A* as the whole sine or radius is to the sine of the angle *A B C*, whose complement is the angle *C*, measured by the arc *A D*. *E. gr.* let *D B*, the height of the eye, be five feet, *D C* or *C A*, the semi-diameter of the earth, be 2094965 feet, and *C B* will be 20949660 feet: then will the logarithm of *C B* be to that of *C A*, or 7.3201769 to 7.3201768 as 10.0000000 to 9.9999999 the sine of *A B C* = 89° 58'; therefore the angle *C* is = 2' or 12188 feet = 2.308 miles, or two miles 532 yards, nearly. *B A*, or the right-lined distance of the farthest point of sight from the eye, may easily be found, as the angles and other sides are known: thus, radius or sine of the angle *A* is to *C B* as the sine *C* is to *B A*: or, since *B A* = $\frac{C B - C A}{2} = \frac{C B + C A \times C B - C A}{2}$: if the logarithm of the sum of the two given sides be added to that of their difference, the half of these two logarithms will be equal to the logarithm of *B A*, nearly, *i. e.* $\frac{7.6222069 + 0.6989700}{2} = 4.1605884$, the logarithm of 14474 feet = *B A*, nearly. See *DISTANCE*.

The depression of the horizon of the sea, at a given height of the eye, may be thus found by calculation; for if the eye be at *B*, the sensible horizon is *F G*, the depression is the angle *F B A*, which being the complement of *A B C*, is equal to *A C D*. See *DEPRESSION*.

The distance on a perfect globe, if the visual rays came to the eye in a straight line, would be as it has been now stated; but by means of the refraction of the atmosphere, distant objects on the horizon appear higher than they really are, and may be seen at a greater distance, especially on the sea. Thus, without refraction, the most distant part of the sea visible to the eye at *B* would be *A*; but refraction elevates the parts of the sea, which are farther from the eye than *A*, so that the tangent or visual ray shall fall upon a more distant point, as *H*, and consequently the extent of the visible horizon is enlarged by refraction: for it is *D H* instead of *D A*; and refraction makes the angle of depression less than it would be, *viz.* *H B F*, instead of *A B F*.

Father Laval, professor of hydrography at Marseilles, found, that the horizon of his observatory toward the sea was never more than 15 minutes, nor less than 13½; that is, the arc of the circumference of the earth, intercepted between the observatory and the horizon, fluctuated between those two quantities; whence *M. Cassini* deduces, that the extent of the horizon is seven French leagues, of three miles each; and that the observatory is 175 feet high.

The height of the horizon, at the same place, and the same elevation above it, is very subject to vary, by means of differences in the atmosphere, which occasion others in the refractions.

When the sea was full, or the north-west or south-west wind blew, and the air hazy about the horizon, *F. Laval* always found his horizon depressed, or lower, *i. e.* the refraction which should raise it in that case was less than ordinary. And yet, on the common principles, the air being now much charged with vapours, the very contrary was rather to be expected. This makes *M. Cassini* suspect that there is some other refractive matter in the atmosphere, beside the air itself.

The same author observes, that at a height ten times greater than that of *F. Laval's* observatory, he found the arc terminated by the horizon toward the sea, 42', without any sensible variation; whence he concludes, that the variations are the greater, as the height is the less; which may seem contrary to what he had asserted in another place, *viz.* that the variations in the apparent altitudes of bodies are greater, as these objects are more remote, because they are seen through the larger quantity of air, which is liable to be varied. But the contradiction may be solved.

HORIZON of the Globe. See *GLOBE*.

HORIZONTAL, something that relates to the horizon, or that is taken in the horizon, or on a level with the horizon.

HORIZONTAL Dial, is that drawn on a plane parallel to the horizon; having its gnomon, or style, elevated according to the altitude of the pole of the place it is designed for.

Horizontal dials are of all others the most simple and easy. The manner of describing them, see under the article *DIAL*.

HORIZONTAL Distance. See *DISTANCE*.

HORIZONTAL Line, in *Perspective*, is a right line drawn through the principal point, parallel to the horizon; or it is the intersection of the horizontal and perspective planes.

Such is the line *P L* (*Plate I. Perspective, fig. 3.*) passing through the principal point *F*.

HORIZONTAL Line, or base of a hill, in *Surveying*, a line drawn on the horizontal plane of the hill, or that on which it stands.

HORIZONTAL Moon. See *Apparent MAGNITUDE*.

HORIZONTAL Parallax. See *PARALLAX*.

HORIZONTAL Plane, is that which is parallel to the horizon of the place, or not inclined to it.

The business of levelling is, to find whether two points be in the horizontal plane; or how much the deviation is. See LEVELLING.

HORIZONTAL Plane, in *Perspective*. See PLANE.

HORIZONTAL Projection. See PROJECTION and MAP.

HORIZONTAL Range, or *level range*, of a piece of ordnance, is the line it describes, when directed parallel to the horizon, or horizontal line.

Dr. Halley gives two very ready theorems: the one, to find the greatest horizontal range at 45 degrees elevation, in any shot made upon any inclined plane, with any elevation of the piece whatsoever; and the other, to find elevations proper to strike a given object with any force, greater than what is sufficient to reach it with the middle elevation.

1. A shot being made on an inclined plane; having the horizontal distance of the object it strikes, with the elevation of the piece, and the angle at the gun between the object and the perpendicular; to find the greatest horizontal range of that piece laden with the same charge; that is, half the latus rectum of all the parabolas made with the same impetus. Take half the distance of the object from the nadir, and the difference of the given elevation from that half; subtract the versed sine of that difference from the versed sine of the distance of the object from the zenith; the difference of those versed sines will be to the sine of the distance of the object from the zenith, as the horizontal distance of the object struck, to the greatest range at 45 degrees.

2. Having the greatest horizontal range of a gun, the horizontal distance and angle of inclination of an object to the perpendicular: to find the two elevations necessary to strike that object. Halve the distance of the object from the nadir; this half is equal to the half sum of the two elevations sought; then say, as the greatest horizontal range is to the horizontal distance of the object, so is the sine of the angle of inclination, or distance of the object from the perpendicular to a fourth proportional; which fourth being subtracted from the versed sines of the distance of the object from the zenith, leaves the versed sine of half the difference of the elevations sought; which elevations are therefore had, by adding and subtracting that half of the difference to and from the aforesaid sum. See PROJECTILE and GUNNERY.

HORIZONTAL Refraction. See REFRACTION.

HORIZONTAL Roots. See FIBROSE roots.

HORIZONTAL Shelters, among *Gardeners*, are defences, disposed parallel to the horizon, for tender plants, blossoms, and fruits, in the spring, to defend them against blasts, and pinching nights.

The usual shelters that have obtained are bafs mats, and other warm coverings, which are rolled up in the day-time, and let down in the night. It was the reverend Mr. Lawrence who first proposed horizontal shelters, chiefly on this principle; that most of our frosts and blasts fall perpendicularly, *i. e.* the condensed vapours, falling from the upper region, do at night form themselves, toward the surface of the earth, into drops of dew, subject to be frozen by the coldness of the air.

Horizontal shelters are to be made by laying rows of tiles, at certain distances one above another, in the structure of the wall, so as to project or hang over the plane of the wall, to carry off the dew, wet, &c. It is an inconvenience, objected to this method, that it is difficult to lead a tree rightly among the tiles, or to keep its figure duly filled up.

But the principal objection against these tiles is this; that they prevent vegetables from receiving the advantage of dews, rains, &c. in consequence of which they become weak and languid, and at last entirely decay. The only sort of horizontal shelters, which Mr. Miller has ever observed to be useful for fruit-trees, are made with two leaves of slit-deal, joined over each other, and painted. This kind of shelter, being fixed upon the top of the wall with pulleys, to draw up and down at pleasure, forms a sort of pent-house, which being let down in great rains or cold nights, whilst the trees are in flower, or the fruit is setting, proves serviceable; but it must be removed soon after the fruit is set, so that the trees may enjoy all the advantages of rain, dew, &c. in the summer, which are absolutely necessary for producing healthy trees, or good fruit.

HORIZONTAL Speculum. One of the great inconveniences mariners have to struggle with, is the frequent want of a horizon; for though the atmosphere may, at the height of 10 or 12 degrees and upwards, be clear enough to give a view of the sun and other objects, yet all below that height is often so hazy, as to hinder a distinct sight of the horizon, and consequently to prevent observations from having the requisite correctness. This inconvenience is removed by a horizontal speculum, invented by Mr. Serfon, who was lost in the *Victory* man of war, in which ship he was sent out to make trial of his machine.

The principle on which this machine was constructed, was derived from the consideration of a top while spinning: for this author observing that the top had a considerable degree of steadiness in, and force to acquire, an upright motion, whether the body which sustained it was in motion or at rest: he therefore concluded, that if a circular machine, whose upper face was a flat polished speculum, was to have a swift circular motion communicated to it, that speculum, by acquiring a horizontal situation, would shew all objects which it reflected, as much below the horizon, as they really are above it. Consequently, if the image of the sun, as seen reflected from the speculum, were made to coincide with the sun's image seen in a Hadley's quadrant, the angle given by the quadrant would in all cases be double the real altitude. Mr. Serfon also found, that to confine the speculum to one place, it was necessary to let the point spin in a cup; for the horizontality of the speculum would not be altered, whatever position might be given to the cup; provided it touched only at the point on which it spun. This curious and useful instrument, as it is now improved by Mr. Smeaton, consists in a well polished metal speculum, of about three inches and a half in diameter, inclosed within a circular rim of brass; so fitted that the centre of gravity of the whole shall fall near the point whereon it spins. This is the end of a steel axis running through the centre of the speculum, above which it finishes in a square, for the conveniency of fitting a roller on it, by which it is set in motion by means of a piece of tape wound round the roller. The cup in which it spins is made of agate, flint, or other hard substance; and a pyramidal cover may be made to the whole, composed of glass panes: by this means an observation may be made with it as well covered as open, and it will thereby be prevented from tarnishing by the moist air and spray of the sea.

If the box be placed steadily, and as level as may be, after the tape is untwined, the speculum will be fit for observation in less than two minutes, and will generally continue so for twelve or fifteen. When it is to be used for a meridian observation, it may be convenient to know what time to set it up; and this may be had near enough by taking the sun's bearing from the meridian with an azimuth compass, allowing for the variation; and if it has about five degrees to run before

it culminates, it is then time to spin the speculum. The observer is to place himself as near the box as he conveniently can, and look down on the sun's image in the speculum, and bring the sun's image seen in the quadrant to agree with it, so that their centres coincide; the quadrant will then give the double altitude, without any allowance for the height of the ship, or the sun's semi-diameter.

When the sun is about 45° high, the observer must look through that sight of the quadrant, which is used for a back observation: but he must look down on the horizontal image, or that in the speculum, as if it was the back horizon; and then making the solar images to agree, the quadrant, according as it is numbered, will give the double altitude, or double zenith distance.

These speculums are as useful by night as by day; for as the images of the smallest stars may be seen in the speculum, consequently any object that can be seen reflected from the glasses of the quadrant, may be observed by the speculum; and these are all the stars of the first magnitude, the planets Venus, Mars, Jupiter, Saturn, and the moon. So that by having the declinations of these bodies in an ephemeris, they may be used in observations as well as the sun.

As the great distresses to which ships are sometimes driven in several parts of the world, for want of a horizon to observe by, are by this ingenious contrivance quite removed, it is hoped the use of this instrument may become general. See HADLEY'S QUADRANT.

HORIZONTAL Dissepiments, in *Natural History*, are terms applied to the thin plates which cross the tubes or stirplets of some corals at right angles, and connect them together, of which the tubipora musica (figured in Ellis, tab. 27.) is an instance.

HORIZONTAL Face, in *Crystallography*, is used by Haüy in describing secondary forms of crystals, the axes of which are supposed vertical, and then the faces perpendicular to these will be called horizontal faces, those parallel to the axes being called vertical faces.

HORIZONTAL Strata, in *Geology*. It seems best to agree with the phenomena of the strata of the earth, as well as with the opinions of the greater number and most able of the writers on the subject, to consider the strata as having been originally concentric with the earth, and entire, and, of course, horizontal in every part. (See *CONCENTRICITY of Strata*.) Considerable tracts of strata are found yet in nearly a horizontal position, the red marle, for instance, on the south and south-west of Derbyshire. (See Mr. Farey's Report to the Board of Agriculture, vol. i. p. 147.) Dr. Charles Anderson, in his "Appendix to the Translation of Werner's New Theory of Veins," p. 256, remarks, that the widest mineral veins occur in horizontal strata, which seem confirmed in Derbyshire, by the very wide veins of spar, void of metallic ores, which obliquely cross Dove-dale on the confines of Staffordshire, in the fourth lime-stone rock, which lies horizontal, or very near it, in these parts.

HORLA, in *Geography*, a town of Norway, in the diocese of Drontheim; 48 miles W.S.W. of Romfald.

HORLOFA, a town of Sweden, in the province of Skone; 11 miles E. of Lund.

HORMAH, or **CHORMA**, from חרם, signifying the same with *Anathema*, in *Scripture Geography*, a town of Palestine, belonging to the tribe of Simeon. It was called *Zephath* before the Hebrews called it Hormah, the occasion of which appellation was, that the king of Arad, a Canaanite, S. of the land of promise, attacked the Hebrews, put them to flight, and despoiled them of a rich booty; upon which the Israelites engaged themselves by vow to destroy every thing belonging to the king of Arad; a purpose which pro-

bably was not executed till after Joshua entered the land of promise. See Josh. xv. 30.

HORMEZION, or **HORMESION**, in *Natural History*, the name of a gem described by Pliny, and seeming to have been a species of hyacinth. He says it was very bright, and of a yellowish-red, or flame colour, with a whitish cast at the edges.

HORMILLOS, **Los**, in *Geography*, a small island in the Pacific ocean, near the coast of Peru. S. lat. 16° 45'.

HORMINODES, in *Natural History*, the name of a gem described by Pliny, and others of the ancient writers. The stone itself, they tell us, was either black or white, but had in it a green speck surrounded by a circle of a bright yellow. It seems to have been no other than one of the oculus bells of our jewellers.

HORMINUM, in *Botany*. See *MELISSA* and *SALVIA*.

HORMISDAS, or **HORMOUZ**, king of Persia, in *Biography*, succeeded to the throne A. D. 579, after the death of his father, the great Chosroes. He had, during the life of his parent, obtained some military reputation, and while directed by the influence of prudent counsellors, he governed his dominions wisely, but when left to himself he exhibited in his character and conduct a number of vices, and displayed the utmost folly and tyranny. Not fewer than 13,000 victims of all ranks are said to have fallen, by his order or connivance, under the sword of the executioner. His cruelty produced hatred, and hatred terminated in rebellion. In this state of things, the khan of the Turks invaded the eastern provinces with a vast army, while the Romans renewed hostilities on the opposite side. The Persian empire would have been subverted had it not been for the valour and talents of Bahrán, or Varanes, who gave the Turks a signal defeat. The successful general, in one instance, was himself defeated by the lieutenant of the emperor Maurice, and Hormisdas had the folly and injustice mortally to affront him by the present of a distaff and a suit of women's apparel. He was bent on revenge, appeared before his troops in this garb, and found no difficulty in rousing them to rebellion; the revolt became general, and, in the confusion, Bindoes, a prince of the blood, who had been imprisoned by Hormisdas, was liberated by his brother. He came to the royal palace at Ctesiphon, where the monarch was sitting in all the pomp of royalty, and began to upbraid him for his tyranny and misconduct. Hormisdas ordered his attendants to seize him; but, overawed by the presence of Bindoes, they were inattentive to the royal command, and stood patiently by and saw the king dragged from his throne into prison, where he was first deprived of his sight, and then of his life. Whether the king was assassinated, or died by less violent means, is not easy to ascertain. He died in the year 599, after a reign of twenty-one years.

HORMISDAS, pope, son of a person named Julius, and a native of Frusino, in Campania, was elected to the pontificate upon the death of pope Symmachus, in the year 514. One of the most prominent circumstances that occurred during his elevation to the popedom was the death of Anastasius, who was succeeded by Justin. The new emperor, though perfectly illiterate, was most zealously attached to the doctrine of the two natures. His promotion, therefore, gave the highest satisfaction to the orthodox throughout the empire. In Constantinople the populace distinguished themselves for their zeal in the Catholic cause, by compelling the patriarch to receive the council of Chalcedon, and to anathematize publicly all those who had rejected the decrees of the synod. He also promised to have what he had done confirmed by a council. A council was accordingly assembled, in great haste, to gratify the impatient and riotous multitude.

The

The acts of this body in behalf of the Catholic faith were approved and confirmed by the emperor, who issued out an edict, commanding all bishops within his dominions to conform to them, on pain of forfeiting their sees. This decree was soon followed by the execution of such of the Euty-chians as were most obnoxious to the orthodox party. By these means of conviction, the bishops of the East were speedily brought to unite in the profession of the Catholic faith, and the emperor undertook, in the next place, to unite them with their brethren in the West. This subject occupied the pope till his death, in the year 523, after a pontificate of nine years. Many of his letters are extant. Bower.

HORMONT, in *Geography*, a town of Persia, in the province of Laristan; 33 miles E.N.E. of Lar.

HORMUS, in *Ancient Music*, was a dance of a gay kind for girls and boys, in which the boys took the lead, putting themselves in manly and military attitudes, the girls following in gentle and modest steps, harmonizing the two virtues of force and temperance.

The Grecian girls of good families assembled in troops, ornamented with nosegays, garlands, and chaplets of flowers; they afterwards went to the temples, singing hymns at the solemn festivals, or at the nuptials of some one of their companions.

The Lacedæmonian dance consisted of three parts, representing the three ages of human life. All singing at the same time.

| | | |
|---------|---|-----------------------------|
| Age | - | We have been valiant. |
| Youth | - | We are so at present. |
| Infancy | - | We shall be so in our turn. |

HORN, **CORNU**, a hard, callous substance, growing on the head of divers cattle, and serving them as weapons of offence and defence.

HORNS, in *Comparative Anatomy*. The parts which receive the name of horns are dissimilar in form and structure. They admit of being divided into four kinds at least: the 1st are found on the *rhinoceros*; the 2d are those of the *ox*, *antelope*, *goat*, and *sheep*; the 3d belong to the *camelopard*, and the 4th to the *deer* kind.

The horns of the *rhinoceros* are those most properly so called, being entirely composed of a horny substance. They are situated not upon the os frontis, but the nasal bones. They are of a pyramidal shape, and have no attachment to the skull but at the surface of their basis. They appear to be made up of a number of fibres resembling strong hairs consolidated together, and rendered smooth upon the surface, except around the base, where the external fibres, being broken off, present the appearance of a brush.

A number of pores, or foramina, are to be seen upon the basis of the horn, into which fine vascular processes are probably received; for, from the structure of the horn of the *rhinoceros*, there is every reason to suppose it is formed upon pulps, in the manner of hair. (See **HAIR**.) These foramina are the orifices of fine canals, or grooves, which pass longitudinally throughout the horn. Cuvier states, that in the *rhinoceros unicornis* there is a thick mucus interposed between the horn and the bone on which it is situated, and that in the *rhinoceros bicornis* the horns are connected with the skin only, and, therefore, they are in some degree moveable. The horns of the *rhinoceros* are not deciduous, but continue to increase from the root, or base, in proportion as they wear.

Horns of the 2d sort are the most common; they belong to many of the ruminating quadrupeds, and some birds have similar processes upon their heads. They consist of three parts, an osseous substance, a vascular investment, and the external sheath. The bone is the part which is first formed: it may be discovered at a very early period as a knob, or

round protuberance, moveable upon the os frontis, and covered with the common integuments: as it elongates, the skin covering it becomes callous, and appears to wear off when the osseous process is found to be clothed in a real case of horn. It then becomes fixed to the os frontis by ankylosis. The original periosteum of the knobs becomes thicker and softer, and its vessels increase in size and number, preparatory both to the growth of the osseous, and the external parts of the horn between which it is interposed, and to both of which it serves as the organ of nutrition. The internal or osseous portion of the horn, even when fully formed, is irregular in its texture, resembling more an osseous deposit from inflammation than natural bone.

The external case of the horns in the *goat* and *sheep* is somewhat different from that of the *ox* and *antelope*: in the latter the horny fibres appear long and continuous, and form close compact layers, incased the one within the other; but in the *goat* and *sheep* they are interrupted by many transverse grooves, are shorter, and have the appearance of imbricated layers of horn.

The growth of the horny cases is from the roots, in the manner of hairs, but it does not appear to go on continually, or without interruption; for the increase in each year is marked by a circular groove near the root of the horn, by which means the age of the animal can be often determined.

Horns of the 3d sort are the short straight processes upon the head of the *camelopard*; these consist of bone, which is of a porous spongy texture; they are united to the os frontis by ankylosis at their base, and the other extremities produce a regular convex knob: the stem or pedicle of these horns is merely covered by the common integuments; but the bulb on the ends sustains a number of strong short hairs, which no doubt grow in a similar manner, and are every way analogous to the fibres composing the horns of the *rhinoceros*.

Horns of the 4th kind are peculiar to the *deer genus*, (*ceruus*): these are composed entirely of bone, and have, therefore, been described, along with the other bones, by Cuvier and other anatomists; we shall, however, find from their history, as well as situation, that they distinctly belong to that class of bones which enter into the composition of horns in general.

The horns of *deer* are shed and reproduced annually, their growth therefore is exceedingly rapid. Their first appearance is in the form of two small cartilaginous knobs or buttons under the skin. These proceed to develop their different branches or divisions in succession, still clothed with what has been called their *velvet* coat. This integument consists of the skin covered with a delicate soft hair, and the periosteum closely united together. The velvet covering is extremely vascular; many of its vessels acquire an extraordinary magnitude. We have seen them in the *stag* during the growth of the horn as large as the quills of a goose, and Cuvier states them to equal the size of the little finger. When the horns are completely formed, the velvet coat loses its vascularity, becomes insensible and dry, and is rubbed off by the deer, leaving the horns, in the hunters' phrase, *burnished*.

The horns of *deer* acquire from friction a degree of polish upon the surface towards the top, but nearer the root, they still retain the impressions of the large vessels that were employed in their secretion. The bone of which they are composed is dense and hard upon the external part, and more light and porous in the interior, although it is without cavity or medullary cells.

The original cartilaginous buttons or rudiments of the horns are sustained upon eminences of the os frontis, with which they form the same sort of union that exists with respect

respect to the epiphysis of bones, being at first loose and afterwards firm. The line of their union is indicated by a circular notched protuberance upon the base of the horn, which is called the *burr*.

When the horns are about to be cast, there appears, upon sawing them in a longitudinal direction, a reddish mark of separation between them, and the eminences of the frontal bone on which they are sustained. This mark becomes more apparent, and at last the cohesion between the horns and the skull is so much destroyed, that the least shock makes them fall after the horn is shed. The eminence of the os frontis presents the appearance of a bone sawed or broken across. Its proper substance is actually exposed, but it very soon becomes covered by the integuments.

The bones which constitute the horns of the *deer* appear to be entirely analogous to the osseous parts of the horns of the other ruminant quadrupeds, and only differ from them in the circumstance of being deciduous. The horns of the *rhinoceros*, and those of the *deer*, should be considered as the two extremes in the history of these organs. The one wants the osseous basis, the other the corneous covering. The horns of the *camelopard* and *ox*, &c. exhibit the examples of intermediate structure.

The formation of the horns has been long known to be much influenced by the condition of the organs of generation. They are sometimes peculiar to the male animal, and in the *deer* kind acquire their full bulk and complete form just before the season of *rutting*, after which they are shed. Doctor Richard Ruffel, in his "Economy of Nature in Diseases of the Glands," relates some curious effects on the growth of *deer's* horns from castration. He castrated a very young *deer*, the consequence was, the horns did not grow. He then took another *deer*, some months older, and castrated it. A little velvet bud arose on one side of the head instead of a horn, and an irregular velvet horn about six inches long grew on the other: both were cartilaginous, and neither had stability enough to stand upright. He next had a *deer* somewhat older than the last castrated, but not cut *clean*, as they term it. The event was this; he had two molt irregular horns, that never cast their velvet, and the left testicle and spermatic cord being least spoiled, the left horn was one-third longer than the right. Nature, not being able to carry on the growth in the regular way, threw out from the sides of the horns some bony knots, from which hung soft penile glands, (as he termed them,) that were covered with velvet, and resembled bunches of grapes. Lastly, he castrated two old *bucks* at the end of February, and their horns dropt off the 21st of March following, so that this event was anticipated five weeks at least. Their horns were however renewed the next year, and were longer than those of the other *bucks* of the same age; but the branches were less in length and size, and neither the velvet covering or the horns themselves were ever cast afterwards. See *Economy of Nature in Acute and Chronical Diseases of the Glands*, by Doctor Richard Ruffel, p. 21.

The effect of castration is also strikingly to be seen in the different kind of horns in the *bull* and *bullock*. In the latter, the growth of the horn seems to be unlimited, but this depends upon the increase of the osseous part, for the corneous sheaths are so thin and imperfectly formed, that they are only fit for the coarser articles of manufacture. It is probable, that if castration could be performed early enough in these animals, it would prevent the growth of horns entirely, as in other cases.

For the explanation of the structure and mode of growth of horns, see the plate on *Comparative Anatomy*, including the representations of *hair*, *horns*, *spines*, &c. Fig. 9. is

a view of the horn of the *rhinoceros unicornis*: *a*, the body of the horn; *b*, the bristled appearance around the root; *c*, the surface by which it is connected with the head covered with minute hairs. Fig. 10. is the button or rudiment of the *stag's* horn, after a fortnight or three weeks growth. Fig. 11. is the horn some weeks farther advanced with several of the branches forming. The horn is still soft and cartilaginous, and covered by its velvet coat. Fig. 12. is a dissected view of a portion of the horn in an early state, to shew the nature of the velvet coat: *a*, the skin clothed with thick close hair; *b*, the periosteum thickened and vascular, and not closely adhering to the bone; *c, c*, some of the large branches of the blood-vessels that nourish the horn unremoved. Fig. 13. is the *deer's* horn fully grown; the remains of the velvet coat are seen hanging in shreds, which the animal rubs off against the trees in the course of a day or two. Fig. 14. exhibits the socket upon the eminence of the os frontis, left by the separation or casting of the horn. Fig. 15. shews the effect produced upon the horns from imperfect castration in a young *deer*, as described and delineated by Dr. Ruffel.

The horns of a *deer* are by huntsmen called his *head*. See *HEAD*.

In the History of the French Academy of Sciences, we have an account of a bullock's horn dug out of the ground in ploughing, which had shot forth fibrous roots, and appeared to have grown, or vegetated after the manner of a plant.

Horns make a considerable article in the arts and manufactures. Bullocks' horns, softened by the fire, serve to make lanthorns, combs, knives, ink-horns, tobacco-boxes, &c.

Horns, when properly reduced by mills or other means, are also found to be excellent as a manure for some sorts of land, where they can be procured in sufficient quantity for the purpose. They are used occasionally in Hertfordshire, and some of the other counties in the vicinity of the metropolis, on the tillage as well as the grafs lands, with considerable success. See *HORN Shavings*.

HORNS, in *Chemistry*: these have been analyzed, and found to contain a very small quantity of earthy matter. Mr. Hatchett burnt 500 grains of ox horn, and the residuum was only $1\frac{1}{2}$ grain, and not half of this was phosphate of lime. Horns chiefly consist of a membranous substance, which possesses the properties of coagulated albumen, and they probably contain a little gelatine. The horns of the hart and buck are exceptions, as they possess the properties of bone, and are composed of the same constituents. See *BONE*.

HORNS, in *Rural Economy*, the well known ornaments which spring out from the heads of different sorts of cattle, sheep, and some other sorts of live stock. It is by the horns that the breeds of many of these sorts of animals are known and ascertained. As the nature of such excrescences must obviously be productive of much offal and waste about the parts in which they are situated, it must of course be a great object of the breeder to get quit of them as much as possible, by the encouragement of the polled kinds, and the proper crossing of them with the other sorts where necessary. See *BREED* and *BREEDING*.

HORN, in *Geography*, a town of Sweden, in East Gothland; 32 miles S. of Linköping.

HORN, or *Hooren*, a town of Austria, famous for its beer made of oats, which supplies all the principal towns of Austria; 40 miles N.W. of Vienna. N. lat. $48^{\circ} 37'$. E. long. $15^{\circ} 32'$.

HORN, a town of Westphalia, in the county of Lippe, near

near which is a plain, called "Vinfeld, or the Field of Victory," supposed to be the place where Varus perished. N. lat. $51^{\circ} 50'$. E. long. $8^{\circ} 52'$.

HORN, an island on the coast of West Florida, between Ship and Massacre islands; nearly 17 miles long, and about half a mile wide.

HORN'S *Island*, a small island near the coast of South Carolina. N. lat. $33^{\circ} 7'$. W. long. $79^{\circ} 17'$.

HORN, *Cape*, a cape on the fourth coast of Terra del Fuego, or the most southern extremity on a group of islands of unequal extent, lying before Nassau bay, known by the name of Hermite islands, and situated in S. lat. $55^{\circ} 58'$, and W. long. $67^{\circ} 46'$. This cape is known at a distance by a high round hill over it. On the N.W. side are two peaked rocks like sugar-loaves; they lie N.W. by N. and S.E. by S. by the compass, of each other. Some other straggling low rocks lie W. of the Cape, and one S. of it; but they are all near the shore. From Christmas Sound to Cape Horn, the course is E.S.E. $\frac{1}{4}$ E. distant 31 leagues. Between this cape and another called "Falso or Mistaken Cape," by Captain Cook, there seemed to be a passage directly into Nassau-bay; some small isles were seen in the passage; and the coast, on the W. side, had the appearance of forming good bays or harbours. Captain Cook observes, though the doubling of Cape Horn is so much dreaded, so that, in the general opinion, it is more eligible to pass through the strait of Magellan, we were not once brought under our close reefed topsails, after we left the strait of Le Maire. He doubled the cape in 33 days, whereas it would have taken much longer time to have failed through the strait of Magellan, with greater fatigue to the sailors, and greater damage to the anchors, cables, sails, and rigging of the ship. He thinks, that different circumstances may at one time render it eligible to pass through the strait of Le Maire, and to keep to the eastward of Staten-Land at another. He also recommends, if neither wood nor water be wanted, to make no port and not to come near the land at all; for by keeping out at sea; you avoid the currents, which, in his opinion, lose their force at 30 or 36 miles from the land, and at a greater distance there are none.

HORN, *Cape*, (*Falso*), a rocky point, which is the southern point of the easternmost of Hermite isles, three leagues E.N.E. from Cape Horn. Off this cape lie rocks that are white with the dung of fowls; and vast numbers were seen about them.

HORN, in the *Manege*; to give a stroke with the horn, is to bleed a horse in the roof of the mouth, with the horn of a stag or roebuck, the tip or end of which is so sharp and pointed, as to produce the same effect as a lancet. They strike with the horn in the middle of the fourth notch or ridge of the upper jaw.

HORN is also a sort of musical instrument, of the wind kind; chiefly used in hunting, to animate and bring together the dogs and the hunters.

The horn may have all the extent of the trumpet.

The term for sounding anciently was, wind a horn; all horns being in those times compassed; but since straight horns are come in fashion, they say, blow a horn; and sometimes, plainly sound a horn.

There are various lessons on a horn; as the recheat, double recheat, royal recheat, running or farewell recheat, &c. See RECHEAT.

Wind instruments of this name and form are as numerous and various, as the animals that nature has armed with this weapon. The principal instrument, however, under that denomination, is the French horn, *cqr de chasse*, hunting

horn, or *corno da caccia*, which is not only useful in the field, but of capital utility in full pieces, sacred and secular, in every orchestra.

The horn is a long tube, narrow at the top, and encreasing in diameter to the end, where its mouth is very wide. It is curled up in a ring or rings, for the convenience of carriage and performance.

It has no holes or keys with which to form different tones; the whole scale is produced by different modifications of the breath at the mouth-piece, by the lips and tongue.

It has the same series of notes as the trumpet, only an octave lower. All the music that is composed for it, is written in the key of C, and its pitch is altered now to any other key by crooks. At the beginning of a movement, the key is indicated by one of the seven letters of the gammut; as D horn, E \flat , F, or G horn, &c. Its natural scale is a regular series of eight notes with the addition of an occasional sharp 4th, and the harmonics of the key below.

Attempts at *chromatic* horns have been made early in the last century, in Germany; the Messings were the first who pretended to perform in all keys in England, about the year 1740. Spandau, from Holland, was the first that was able to make the artificial notes agreeable, about 1772, and soon after, Ponto did wonders on this instrument. We have now (1803) four excellent performers on the horn, the Leanders and Petrides. These last have the art of echoing passages in such a manner as to seem at a great distance without quitting their place in the orchestra. It must, however, be discovered, by every discriminating hearer, that the factitious half notes, that are made by the hand in the mouth of the instrument, are sounds of a different quality from the natural tones of the instrument. We have often thought that Ponto, with all his dexterity, produced some of these new notes with similar difficulty, to a person ridden by the *night mare*, who tries to cry out, but cannot.

The Hebrews made use of horns, formed of rams' horns, to proclaim the jubilee; whence the name *jubilee*; which see.

The French horns used in concerts are usually tuned an octave lower than the trumpets, to which they are closely allied in their principles. The whole length of tube yielding the fundamental note is often about ten feet, but it is the octave of this that performers in general are able to reach, in which the column of air in the tube vibrates in two equal parts: by blowing a little harder, the performer has it in his power to cause the column of air in the tube to divide itself into three equal parts, and whose vibrations consequently have the ratio of $\frac{1}{3}$ to the fundamental, or VIII + V; a little harder blowing will occasion three nodes or quiescent points in the tube, and the ratio of the sound will be $\frac{1}{4}$, or 2 VIII: harder still produces $\frac{1}{5}$, or 2 VIII + III: the next note is $\frac{1}{6}$, or 2 VIII + V, a repetition of $\frac{1}{2}$ an octave higher: then $\frac{1}{7}$, which is a false or unnatural note, less than the minor 7th ($\frac{2}{7}$) by $24.9472 \Sigma + 2 m$, the note being 2 VIII + this false 7th above the fundamental tone of the instrument. By blowing still harder each $\frac{1}{8}$ th part of the tube's length yields its sound, which has the ratio $\frac{1}{8}$, or 3 VIII: the next is $\frac{1}{9}$, and gives 3 VIII + II, or: the true major tone: then $\frac{1}{10}$, or 3 VIII + III, a repetition of $\frac{1}{4}$ th: then comes $\frac{1}{11}$, which is $27.25171 \Sigma + 2 m$ sharper than a true minor fourth, being 3 VIII + this false 4th: the next note is $\frac{1}{12}$, or 3 VIII + V, another repetition of $\frac{1}{2}$: then $\frac{1}{13}$, which also is a false note, $22.58107 \Sigma + 2 m$ lower than a true major sixth, or 3 VIII + this false Vith: then $\frac{1}{14}$, which is a repetition of the false 7th, or $\frac{2}{7}$, but an octave higher: then $\frac{1}{15}$, or 3 VIII + VII, or true major seventh, 13° : then $\frac{1}{16}$, or 4 VIII: then $\frac{1}{17}$, which is a false minor second,

second, 3.46819 less than the major semitone, $\frac{1}{2}$, or 4 VIII + this false 2d: then $\frac{1}{12}$, or 4 VIII + II, a repetition of $\frac{1}{3}$ above: then $\frac{1}{12}$ which is a false minor third, less by 9.27098 $\Sigma + m$ than the true minor third, $\frac{1}{3}$, or 4 VIII + this false 3d: then $\frac{1}{12}$, or 4 VIII + III a repetition of $\frac{1}{3}$, two octaves higher: then $\frac{1}{12}$, or 3 VIII + V + the false 7th arising from $\frac{1}{7}$, or another false minor fourth (differing 41.1989 $\Sigma + 3 m$, from $\frac{1}{7}$ above), which is 13.9472 Σm flatter than the true 4th. Next, by increasing the strength of the blast, will arise $\frac{1}{24}$, which is a repetition of the false former fourth $\frac{1}{12}$ as above, an octave higher: then $\frac{1}{12}$, which is a false minor fifth, 9.460262 + m sharper than the semidiapente or flat fifth, $\frac{1}{2}$, or 4 VIII + this false 5th, which is 19.46026 $\Sigma + 2 m$ sharper than the major fourth or tritone, $\frac{3}{4}$: then $\frac{1}{12}$, or 4 VIII + V, a repetition of $\frac{1}{3}$ three octaves higher: then $\frac{1}{12}$, or 4 VIII + 2 III, the double (or square) of $\frac{1}{3}$, and is 21. $\Sigma + 2 m$ flatter than the true minor sixth, or 4 VIII + this false 6th: then $\frac{1}{12}$, which is the repetition of the false major sixth $\frac{1}{3}$, above: then $\frac{1}{12}$, or 3 VIII + 3 V the triple of $\frac{1}{3}$, is another false major sixth (differing 23.58107 $\Sigma + 3 m$ from $\frac{1}{7}$ above), or 4 VIII + a comma-redundant major sixth, instead of the true VI: then $\frac{1}{12}$, which is a repetition of the false minor seventh or $\frac{1}{2}$ as above, but two octaves higher: then $\frac{1}{12}$, which is another false minor seventh (differing 31.0707 $\Sigma + 3 m$ from $\frac{1}{7}$, above) and being 6.12449 $\Sigma + m$ sharper than the minor seventh, $\frac{1}{2}$, or 4 VIII + this false 7th: then $\frac{1}{12}$, or 4 VIII + VII, a repetition of $\frac{1}{12}$, an octave higher: and lastly, $\frac{1}{12}$ is a false eighth less than the octave by 28.11748 $\Sigma + 2 m$, or 4 VIII + this imperfect VIII.

And thus we have all the natural horn or trumpet notes within the compass of five octaves, of which it may be observed, that the IIIrd, Vth, and VIIIth are the only *concord*s found among these horn notes, which explains the reason of these being the only *Acute HARMONICS* (see that article) which accompany a note: the IIrd and 6th composed by doubling these harmonics, the XIIth and the XVIIth; the VIth by tripling the XIIth; and the VIIth by combining the XIIth and XVIIth together, are the only other notes of the horn or trumpet which belong to the diatonic scale, this diesis-deficient minor sixth, and the comma-redundant major six, being however inapplicable to practice, and all the remaining ten notes, enumerated above, are anomalous, and have the effect of highly tempered notes or wolves in the practice of diatonic music, which is alone used at this day. Composers for the horn contrive to introduce as few of these false notes into their pieces as possible, and modern horn players also, by introducing their hand, or a block of wood, into the broad end of the horn, contrive, by habit, to correct many of the false intervals when playing in concert; but this is often done at the expence of clearness and fulness of tone.

The late Mr. Charles Claggett, by combining two horns or trumpets of different pitches together, so that the same mouth-piece, by means of a slide, acted on by the finger, could instantly be made to sound either tube, which he called his *chromatic* French-horns and trumpets, pretended, that by this means all the false notes were corrected: which of course supposed, that they were all alike tempered or defective, and that these lay all the same way, but which is far from being the case, as will appear from the recapitulation of the temperaments in the margin, where, however, the flat fifth is omitted, being sharpened + 9.460 Σ , and consequently it would be further injured by a new tube, sharper than the first, either

15.836 Σ (which is the mean among the above *flat* temperaments), or by any other difference of pitch in the two tubes, which might be adopted. We shall resume the curious theory of this instrument in the article TRUMPET. Horns are *tuned*, or brought to the proper pitch for playing in concert with other instruments, by means of short pieces of tube of different lengths called crooks, which are put on or taken off below the mouth-piece, so as to lengthen or shorten the entire length of the tube, according as the pitch wants lowering or raising.

HORN, in *Architecture*, is sometimes used for volute.

HORN is sometimes also used for the hoof of a horse, &c.

HORNS, in *Botany*. See MEDICAGO.

HORNS and Hedge-hog. See MEDICAGO.

HORNS of the Altar. See ALTAR.

HORN, Ammon's. See CORNU Ammonis.

HORN-beech Tree, in *Gardening*. See CARPINUS.

HORN-bill, in *Ornithology*, the genus buceros of Latin authors, calao of the French. This genus is distinguished by having the bill convex, curved, and sharp at the edge, large, serrated outwardly, and furnished with a horny protuberance or excrescence on the upper mandible near the base; the nostrils behind the base of the bill; tongue short, and sharp at the point; legs scaly; toes, three forward and one backward, the middle one connected to the outer as far as the third joint, and to the inner as far as the first.

These birds subsist, for the most part, on fruits of various kinds, generally inhabit woods, and with few exceptions are natives of the old continent.

Species.

BICORNIS. Front bony, flat, and bicornuted at the fore part. Linn. Amoen. Acad. *Hydrocorax Philippensis*, Briff. *Rhinoceros avis prima varietas*, Will. *Calao*, Petiver. *Philippine horn-bill*.

Native of the Philippine islands; size of a common hen; the plumage above black, beneath white; quill-feathers with a white spot; tail rather long and black; tail-feathers ten in number, of which the exterior four on each side are white and those in the middle black; legs greenish. A supposed variety is described in the 23d volume of the Philosophical Transactions under the name of cayao vel calao, the bill of which is red, the belly black; and the back and rump brown-ash; the legs scaly and reddish, and the claws black.

This species does not frequent watery places, but inhabits the higher lands, and is most common in mountainous situations. It feeds on fruits, among which it prefers the fig, almond, and pistachia; these it swallows whole, and after digesting the pulp casts up the stones entire. Its voice is said to resemble the bellowing of a calf. The Indians worship this species as a deity.

ABYSSINICUS. Black; bony protuberance semicircular on the fore part; orbits, chin, and part of the throat naked, and violet brown; greater quill-feathers white. Gmel. *Grand calao d'Abyssinia*, Buff. *Abyssinian horn-bill*.

Resembles a raven in shape, but is larger and more robust; it inhabits Abyssinia, and subsists chiefly on the large green beetles which infest the plantations of grain. The flesh has a fœtid odour. According to Bruce it lodges in thick trees, and is known by the name of "teir el naciba," or bird of destiny, on the frontiers of Sennaar. In the eastern parts it is called *abba gumba*, and in the west *erkooms*. The bill is black, edged with white, and about the base of the upper mandible each side is a tuft of bristly feathers.

| | |
|-----|----------|
| | Σ |
| 7th | — 24.747 |
| VI | — 22.581 |
| 6th | — 21.000 |
| 4th | — 13.947 |
| 3d | — 9.271 |
| 2d | — 3.468 |

HORN-BILL.

AFRICANUS. Black; protuberance on the bill like a horn, straight and pointed. Gmel. &c. *Hydrocorax Africanus*, Briss. *Rhinoceros avis secunda varietas*, Will. *Brac ou calao d'Afrique*, Buff. *Trompette de Brac ou oiseau trompette*, Labat. *African horn-bill*.

Described on the authority of Labat, who tells us it is the size of a turkey, with the plumage wholly black; the bill and head measured together were equal to eighteen inches; the figure of the bill not unlike that of the Philippine horn-bill, but having the appendage on the top of the upper mandible almost straight at the point; the colour partly red, and partly yellow, and the edges and base of both mandibles black. This description is adopted from father Labat by Buffon, nor does it appear to be better known since that time, as Sonnini, in the latest edition of Buffon, adds nothing to the description that was previously given by that author. There is or was formerly a specimen of this bird in the Leyden museum.

MALARARICUS. Black, beneath white; protuberance rounded above, acute towards the front, and reaching behind the eyes. Gmel. *Calao de Malabar*, Buff. *Pied horn-bill*.

The length two feet six inches, or three feet; both mandibles curved downwards, and sharp at the tip; protuberance four inches and a half long, the greater part black, the middle, both of the protuberance and the bill, dirty yellowish-white; vent, quill, and outer tail-feathers tipped with white; legs strong and black; claws long, hooked, and rather blunt. This species is known to devour rats, mice, and small birds, raw flesh, and vegetables; its motions are not dissimilar to those of the magpie, leaping forwards or sideways with both legs at once; its note is various, being sometimes hoarse, or like the clucking of a turkey, and sometimes weaker.

Sonnerat describes a variety of this bird under the name of *Calao de la côte de Coromandel*, from its being found on the coast of Coromandel; the bill of this kind is curved, the protuberance egg-shaped; quill-feathers and tail, except the two middle feathers, which have their bases black, are white. Dr. Latham is inclined to believe the *calao des Philippines* of Pl. Enl. is also a variety of this bird.

ALBIROSTRIS. Bill white.

This kind, which is recently described by Sonnini under the title of *le calao a bec blanc*, is nearly allied to the former species, *B. malabaricus*.

HYDROCORAX. Protuberance flattened forwards; the belly tawny. Gmel. *Hydrocorax*, Briss. *Corvi marini* genus, Cluf. *Corvus indicus*, Bont. *Corbeau Indien*, Salerne. *Calao des Moluques*, Buff. *Indian horn-bill*.

A native of the Molucca isles; its length two feet four inches; the protuberance cinereous, and behind whitish; crown blackish; cheeks and chin black; hind head and neck pale chestnut; back, shoulders, and rump, with the wing and tail-coverts, brown; breast and belly blackish, the latter yellowish on the hind part; tail ash or dirty white; legs grey brown; claws black. Feeds on the wild nutmeg, which renders its flesh pleasantly aromatic. This bird is frequently tamed to destroy rats and mice.

RHINOCEROS. Protuberance recurvate and pointed. Gmel. *Hydrocorax indicus*, Briss. *Rhinoceros*, Bontius. *Horned Indian raven*, or *rhinoceros bird*, Will. *Calao rhinoceros*, Buff. *Bec de Poiseau rhinoceros*, (*the bill*), Buff.

Length three feet. This species inhabits India, preys on rats, mice, and carrion, and often follows the hunters for the entrails of their game. The bill is ten inches long, the protuberance eight inches. Inhabits India.

COLLARIIS. Protuberance of the bill flat, grooved, and

yellow; body and wings black; space of the neck bright red; tail white. *Le calao de Waygiou*, Sonnini.

A species found in Waygiou, one of the Molucca isles; its length is two feet and a half; and the bill seven inches and a half long.

VIOLACEUS. Protuberance large, and much elevated above the upper mandible, flat at the sides, and marked with two longitudinal furrows; plumage above black, glossed with green, beneath white. *Le calao violet*, Levaillant.

Found in the isle of Ceylon, and on the coasts of Coromandel.

CORONATUS. Protuberance sub-coronated, the bill large and yellow, or reddish; body above blackish, glossed with blue; abdomen and thighs yellowish white; tail rounded, white, and in the middle, black. *Le calao a casque en croissant*, Sonnini.

Size of the rhinoceros horn-bill. This species is common in the Molucca isles, where it inhabits great woods, is very savage, and feeds on carcases. The legs are blackish brown.

GALEATUS. Bill straightish; protuberance nearly square, the posterior part rounded, the anterior flat. Gmel. *Calao a casque rond*, Buff. *Helmet horn-bill*.

Nothing more is known of this curious species than the bill and head, the structure of which sufficiently distinguishes it, and announces it to be of a larger size, and possessed of greater strength than the generality of other birds in the same tribe. Specimens of the bill are not unfrequent in museums, and these vary in length from six to eight inches; the colour is usually red, and the feathers, sometimes attached at the base, are black.

PANAYENSIS. Greenish-black, beneath reddish-brown; protuberance sharp above, and flat at the sides. Gmel. *Calao à bec cizelé de l'isle de Panay*, Sonnerat. *Panayan horn-bill*.

Size of a raven; the bill very long, arched, brown, with transverse lateral wrinkles, and longitudinal orange furrows; orbits naked and brown; irides whitish. The head and neck of the female is white, with a large triangular greenish-black spot; legs lead colour. Inhabits the isle of Panay.

MANILLENSIS. Above blackish-brown, beneath dirty-white; bill not ferrated; protuberance small. Gmel. *Calao de Manille*, Buff. *Manilla horn-bill*.

Native of Manilla; length twenty inches. The bill rather curved and acute at the tip; head and neck white, waved with brown; temples with a black spot; tail with a fulvous band across.

NASUTUS. Front smooth; tail-feathers white at the base and tip. Gmel. *Crotophaga*, Forkal. *Hydrocorax senegalensis melanorhynchos*, Briss. *Calao à bec noir du Senegal*, Buff. *Black-billed horn-bill*.

Inhabits Africa, near the river Senegal; its size is about that of the common wood-pecker; it feeds on fruits, and, when young, is easily tamed. When young the bill of this bird is black, the colour changing gradually to red as the bird grows older; the body above is fordid greyish, and white beneath; claws black. The bird called by Buffon *le lock* is considered as a variety of this bird; its size is nearly the same, except that its length is half an inch less; the body varied with grey and black, beneath and collar whitish; head and throat lined with black; two middle tail-feathers grey, the rest blackish, with the tip white.

ALBUS. Snowy-white; bills and legs black. Gmel. *White toucan*, Hawkesworth It. *White horn-bill*, Lath.

A species described from a specimen caught between the island of Tinian and Pulotimoen. Size of a small goose; the bill

bill narrow, and bent down; neck a foot long, and as small as that of the crane.

LOBATUS. Protuberance on the bill divided transversely into several lobes; plumage black glossed with blue; on the shoulders a red brown spot; tail whitish. *Le calao a casque festonné*, Levaillant.

Inhabits Batavia; length thirty inches, the bill five inches long and two thick, and the margin not denticulated; colour yellowish-white, with the base brown; eyes surrounded by a naked wrinkled skin which covers the base of the mandible, and descends upon the throat; the feathers on the back of the head are long; great quill-feathers deep black. The female is rather smaller than the male, and has no space of red brown about the shoulders.

OBSCURUS. Protuberance rounded above, and divided into seven or eight lobes; body black; tail-feathers white. *Buceros plicatus*, Latham. *Indian raven*, Will. *Wreathed horn-bill*.

Native of New Guinea; the bill bent, and five or six inches in length. A supposed variety of this bird, found in Ceylon, has the protuberance on the bill divided into no more than five lobes.

GINGINIANUS. Bill bent, compressed laterally; protuberance pointed; body above green, beneath white; two middle tail-feathers dirty, rufous grey, with a band of black at the end; the rest black rufous near the end, and white at the tip. *Buceros ginginianus*, Lath. *Le calao de Gingi*, Sonnerat. *Gingi horn-bill*.

Length two feet; the bill from the base to the middle with the protuberance black, the rest white, the edges serrated; cheeks with an oval black bar under the orbits; legs black. Inhabits the coast of Coromandel.

ORIENTALIS. Bill convex, above carinated, at the base protuberant; orbits naked, wrinkled, and cinereous; body blackish. Lath. *New Holland horn-bill*.

Inhabits New Holland; size nearly as large as the jay; the nostrils open near the base of the bill.

GRISEUS. Protuberance sloping before, abrupt behind; body grey. Lath. *Grey horn-bill*.

Native of New Holland; the crown black; bill yellow, with a black spot at the base; at the corner of each eye a tuft of bristles, and behind a naked blue spot; wing-coxes variegated with black; quill-feathers white at the tip.

VIRIDIS. Protuberance abrupt; body black; wings greenish. Lath. *Green-winged hornbill*.

The bill in this species is yellowish, at the base of the under mandible is a whitish blue spot; the outer tail-feathers, with the base of the quill-feathers, and the belly, white; legs blueish. Country unknown.

CEYLONENSIS. Bill denticulated, and without protuberance, black and white; head above, crest, hind part of the neck, back, and coverts of the tail brown, blended with blueish grey. *Le calao gingala*, Levaillant.

Inhabits the isle of Ceylon.

JAVANICUS. Bill not denticulated and without protuberance, brown with the base yellow; front, head above, and long feathers of the crest red brown; body above and beneath black; neck and tail white. *Le calao javan*, Levaillant.

Length thirty inches; bill four inches and a half long; skin under the eyes, and chin down to the throat, deeply wrinkled; plumage finely glossed with greenish; legs brownish, and the claws yellowish white. This species inhabits Batavia, where it is called *jaar vogel*.

Levaillant, to whose costly work on American and Indian ornithology, we are indebted for an account of the two preceding birds, has placed them in the calao or horn-bill tribe,

and in this respect we follow his example, though not entirely satisfied with such an arrangement. The absence of a protuberance on the bill in both kinds seem clearly to remove them from the calao tribe, notwithstanding they accord with that genus in some other particulars; in the denticulation of the bill and structure of the claws *le calao gingala* agrees with the horn-bill, but *le calao javan* is still less nearly allied, the bill in this kind being neither denticulated nor serrated at the margin, and it has only the claws of the true horn-bill to justify its reference to that genus. The last mentioned kind, from the form of the bill, appears in some degree connected with the corvus tribe.

HORN-blend, is a black or green indurated bole or clay, consisting of scaly particles, which are distinguishable from those of mica, by being less shining, thicker, and rectangular. It is generally found among iron ores, and sometimes intermixed with mica, forming a compact stone.

HORN-coal, in *Mining*, is applied to such coal as dips almost equally on the *face* and the *end*, or in which the strata or lengthway joints of the coal cross the water level diagonally, such coal being often worked with salient and re-entering angles, like the horn-works of a fortification, whence probably the name was derived; such are often called half-workings of coal.

HORN-coot, a name given by fowlers to the great horn-owl. (See *STRIX Bubo*.) A sportsman who has got one of these birds, has a constant lure to draw together almost what numbers of others he pleases. The method of taking other birds by it is thus: the sportsman fixes upon some single tree which stands in the middle of an open field, and cutting the boughs of this into a regularity, he spreads nets all about it, and then places his owl within them, with a string fastened to its leg, by means of which the bird may be put in motion by the sportsman as he stands at the distance under covert. There are to be two perches placed near one another, so that the owl can easily go from the one to the other. It is the nature of this bird to fly only by night, and therefore whenever it is seen by day-light, all the other birds quarrel with it, and abuse it; even the hawks will make at it wherever it comes in their way. The sportsman depends upon this; and as soon as he sees any bird approach, or as soon as the owl, who sees farther than he can, gives him the signal that some bird is in sight, he pulls the string, on which the owl, being disturbed, flies from one perch to the other. This draws the strange bird to her; and flying violently at her, it is entangled in the net placed with that intent, and the sportsman must immediately run up and take it out, and replace the net for the next.

HORN-fish, an English name for the fish which we also call the gar-fish. It is properly a species of pike or efox. See *ESOX Belone*.

HORN-fish, in *Ichthyology*. See *CORNUTUS piscis* and *BRACULEATUS*.

HORN, harts, cornu cervi. The scrapings or raspings of the horn of this animal are medicinal, and used in decoctions, ptifans, &c.

Hartshorn is too expensive an animal bone to be employed for the common preparations of ammonia, for which purpose the bones, that are the refuse of the streets, are used; and if, after distillation, they be further burnt in an open fire, the residue in each instance will be the same, and chiefly phosphate of lime. Hartshorn, however, affords that particular modification of bone to which the preference is given for the purposes of pharmacy, and the consumption is not so great, as to render the direction either too expensive or difficult to be complied with. The phosphate of lime left

amounts to 57.5 of the bones employed; they appear also to contain a small quantity of carbonate of lime and phosphate of magnesia, and the remainder is animal matter, which passes away in various compound gasses under the circumstances in which it is in this preparation directed to be placed.

Hartshorn *jelly* is nutritive and strengthening, and is sometimes given in diarrhœas; but a decoction of burnt hartshorn in water is more frequently used for this purpose, and is called hartshorn *drink*. See *JELLY*.

The coal of hartshorn, by being calcined with a long continued and strong fire, is changed into a very white earth, called hartshorn calcined to whiteness, or *cornu ustum*. This earth is employed in medicine as an absorbent, and administered in dysenteries and labour-pains, which are supposed to be caused by acrid and ill-digested matters. This earth levigated is the basis of Sydenham's white decoction, which is commonly prescribed in these diseases.

The white decoction or mixture of burnt hartshorn is prepared by boiling down two ounces of hartshorn burnt and prepared, and one ounce of Acacia gum, in three pints of water to two, constantly stirring, and afterwards straining it. As burnt hartshorn consists entirely of phosphate of lime, which is insoluble in the preparation above directed: it is only brought into the state of a very fine powder, and is kept mechanically suspended in a mucilaginous liquor, on which account the gum is an useful addition, to the original formula in Bates's Pharmacopœia, which contains none. This is retained in the last pharmacopœia as one of those established forms which are in use with many practitioners. The *pulvis opiatum*, or powder of burnt hartshorn with opium, is a composition of hard opium powdered, a drachm, hartshorn burnt and prepared, an ounce, and cochineal powdered, a drachm, well mixed. This preparation affords a convenient mode of exhibiting small quantities of opium, ten grains containing one of the opium. As the article by which it was divided is of no other consequence, a small quantity of cochineal is added to give it a colour, and thus to prevent it from being accidentally confounded with any of the numerous white powders kept in the shops. The former name of *pulvis opiatum* was particularly exceptionable, as sometimes in the abbreviation of prescriptions it was found to be mistaken for *pulvis opii*. The salt of hartshorn is a great sudorific, and given in fevers with success; and hartshorn also yields, by distillation, a very penetrative volatile spirit.

HORN-bipped. A horse is said to be so, when the tops of the two haunch-bones appear too high.

HORN-owl. See *STRIX bubo*.

HORN of Plenty. See *CORNUCOPIA*.

HORN with horn, or *HORN under horn* (*cornutum cum cornuto*), is when there is common *per cause de vicinage*, inter-commoning of horned beasts. See *COMMON* and *INTER-COMMONING*.

HORNS of Insects. See *FEELERS* and *ENTOMOLOGY*.

HORN Shavings, a term applied to the small thin pieces of waste horny matters which are formed in the preparation of different articles from this substance, in extensive manufactories. Every sort of refuse material of this description has been found beneficial upon land, when employed in the way of a manure, either as a top-dressing, or when turned into the soil. In the county of Hereford they make use of two descriptions of these sorts of matters, the *small* sort, or turner's shavings, and the *large*, or refuse pieces of horn, which are cut off by the saw or any other tool. The farmers purchase the first of these sorts in London, at from about thirteen or fourteen shillings the quarter, or ten-bushel sack

stuffed quite full, mostly weighing about two hundred and a half. They are generally employed exactly in the same way and proportions per acre as the clippings of farriers, only they do not stand in need of being pricked into the soil when used upon the surface of the tillage lands. And it is the usual practice with the large sort to have them ploughed into the soil, about three months before the time of sowing either wheat or barley. Shavings of these kinds are found, from actual trials, to answer well in most soils and seasons, with the exception of such as are very dry and parching, when they are said not to work, by the farmers. The small shavings should be preferred, as being the most useful and advantageous when employed in the way of a dressing for land. See *MANURE*.

HORN, Staining of. See *BONES*, *DYEING*, *IVORY*, *TORTOISE-shell*, and *WOOD*.

HORNS, Fossil, in Natural History. The horns of animals, accompanied by their skulls and bones, or otherwise, are frequently found in the earth, but always in loose and alluvial earth, or in caverns and fissures, near the surface, as was remarked by Dr. Woodward, and has been confirmed by subsequent observers. The fossil horns which have been described are said to be those of

A Calf, described to be conic, crooked, with a pith and ray, not unlike a young budded horn. Dr. Grew's *Rarities*, p. 274.

Deer.—Horns resembling those of deer are said to be frequently met with in the peat-pits in Ireland. *Phil. Transf. Abr.* by Lowth, vol. ii. p. 434.

Some of these are very large, and have very broad palms above the brow antlers, which are palmated also. (*Gent. Mag.* vol. lxxv. p. 1133.) Parts of a large deer's horn were found in a pit at Hutton Hill, in Somersetshire. (*Jones's Phys. Disq.* p. 425.) In digging the West India Docks, in the Isle of Dogs, and also in the peat-pits near Newbury, in Berkshire, deer's horns are met with. *Parkinson's Org. Remains*, p. 95 and 98.

Horns of the fallow-deer are said to have been found by M. Cuvier, in loose strata, in France. *Phil. Mag.* vol. xxxv. p. 387.

The horns of the moose-deer, very large, were dug up in 1781, at Beline, N. E. of Carrick, in Kilkenny, in Ireland, which are preserved in Besborough hall, near that place. (*Tigh's Survey of Kilkenny*, p. 98.) Others are mentioned by Mr. Jamieson, Shetland Isles, p. 158. Horns of this kind of deer are also mentioned to be found in America. *Jones's Phys. Disq.* p. 420.

The horns of a rein-deer were preserved at Chester, which were dug up there. *Benj. Martin's Nat. Hist.* vol. ii. p. 245.

Elks.—Among the remains of ruminating animals in loose strata, M. Cuvier found the horns of a species of elk, now extinct. In Hardwick hall, near Alt Hacknal, in Derbyshire, horns of a prodigious size are preserved, which, it is said, were found many years ago in peat, in the northern parts of Derbyshire, and to be those of an elk.

Goats.—The horns of goats are among those enumerated by M. Cuvier, as found in the recent alluvial soils near Paris. *Phil. Mag.* vol. xxxv. p. 387.

Oxen.—The horns of different species of these, are stated by M. Cuvier to be found in the loose recent soils of some vallies in France.

Stags.—The head and horns of a stag were dug up at Watlington park, in Oxfordshire, mentioned by Dr. Plott, *Staffordshire*, p. 161. In the peat of Plumstead level, by the Thames. (*Phil. Transf.* vol. l. p. 109.) They have also occurred

occurred to M. Cuvier in the alluvia and putrid marshes of France. *Phil. Mag.* vol. xxxv. p. 387.

In the accumulations of tufa from the petrifying springs at Matlock Bath, and formerly at Alport, near Yolgrave, in Derbyshire, very large flags' horns have been found at different periods.

Urus.—The horns of this large animal have been found in the peat-pits of Ireland (Jamefon's Shetland Isles, p. 158.); and according to M. Cuvier they have been found in the valley of the Somme, also in Suabia, Prussia, Italy, and England. *Phil. Mag.* vol. xxxv. p. 387.

The horns of very large unknown animals were found at St. Martins, near Commercy (Nicholson's Journ. 8vo. xxiii. p. 159.); and others with the teeth and skull at Oelte, near Ninava, in Russia, (*Phil. Mag.* vol. xxxv. p. 318.) At Hop-ton hall, in Derbyshire, the pith of a horn $5\frac{1}{2}$ inches diameter above the bone of the skull; and 16 inches long, is preserved, which was found near Padley hall, 15 feet beneath the surface, in the deep-cutting at the W. end of the Butterly tunnel for the Cromford canal.

We have selected the above, in order to shew, that the horns found in a fossil state in the earth are of various kinds; and from the details which are preserved respecting them, there seems no reason to think that horned animals existed, while the strata were depositing, the most ancient of these horns being found in the alluvial flats or marshes in the vallies, and no inconsiderable portion of them in peat, which proves their recent origin.

Sometimes extraneous fossils have been called horns, which have no pretensions to that character, an instance of which occurs in Derbyshire, where the quarrymen and colliers find a conical and slightly bent fossil, which they say is the bony core of a horn, or harn as they pronounce it; these are found, with some variations in the shape, in grit stone at Overton quarry, at Wickersley quarry in Yorkshire, in Wingefworth, Chesterfield, Alfreton, &c. In bind at Bretby, &c. Mr. William Martin, in his *Petrificata Derbiensia*, plate 8, shews them to be of vegetable origin, and denominates them *Graminis fulcatus*. Some have supposed these horn-like fossils to be a kind of cupped coralloid.

HORNS of the uterus, two processes arising from the sides of the fund. See *UTERUS*.

HORN-work, in *Fortification*, a sort of out-work, advancing toward the field, to cover and defend a curtain, bastion, or other place, suspected to be weaker than the rest: as also to possess a height, &c.

It consists of a front and two branches; the front is made into two demi-bastions and a curtain; its sides, or flanks, are usually parallel; though sometimes they approach or contract towards the place, forming what they call a *queue d'yronde*, or swallow's tail.

When the flanks are too long, they sometimes make epaulements to flank them. The parts of the horn-work next the country are to be defended by a parapet.

For the construction of horn-works, produce the capital of the ravelin beyond the salient angle A (*Plate VI. Fortification; fig. 1.*) to the distance AB, of about eighty toises; draw DBE at right angles to AB, in which take BD, BE, each equal to fifty-five toises; and on the outward side DE, trace the front of a polygon in the same manner as that of the body of the place, making the perpendicular BF eighteen toises, and the faces thirty. The branches Da, Eb, of the horn-work, when produced, terminate on the faces of the bastions, within five toises of the shoulders. The ditch of the horn-work is twelve toises,

and its counterscarp parallel to the branches, and in the front terminates at the shoulders. The capital of the ravelin before the front of the horn-work is thirty-five toises, and the faces terminate on the shoulders, or rather two or three toises beyond them; and the ditch before the ravelin is eight toises. There are sometimes made retrenchments within the horn-work, such as S, S; which are constructed by erecting perpendiculars to the faces of the ravelins, within twenty-five toises of their extremities. This retrenchment, like all others, has a parapet turfed only with a beam of eight feet before it, and likewise a ditch from three to five toises broad. When a horn-work is made before the bastion, the distance of the front from the salient angle of the bastion is a hundred toises; and the branches terminate on the faces of the adjacent ravelins within five toises from their extremities; the rest of the construction is as before.

Two horn-works joined together make a crown-work, which is constructed by describing from the salient angle A (*fig. 2.*) of the ravelin, as a centre, an arc of a circle, with a radius of about 120 toises, cutting the capital of the ravelin produced at C; from the point C set off the chords CB, CF, each equal to a hundred and ten toises, and on each of these construct the front of a polygon of the same dimensions, as in the horn-work, that is, the perpendicular should be eighteen toises, the faces thirty, and the branches terminate on the faces of the bastions, within twenty-five toises of the shoulders. The ditch is twelve toises; the capital of the ravelin thirty-five, and its ditch eight. When the crown-work is made before the bastion, the arc is described from the salient angle of the bastion with a radius of a hundred and twenty toises, and the branches terminate on the faces of the adjacent ravelins, within twenty-five toises of their extremities, &c. as before. Muller's *Elem. of Fortif.* p. 39, &c. See *Military CONSTRUCTION*.

HORN-wrack, in *Zoology*, the trivial English name of the genus *Flustra*, a tribe of *Vermes* in the *Zoophyta* order. See *FLUSTRA*.

HORNAGIUM, *HORNAGE*, in our ancient *Laws Books*, seems to import the same with *horngeld*.

HORNBEAM, in *Botany*, &c. See *CARPINUS*.

HORNBEAM, in *Rural Economy*, a name commonly given to a tree of the deciduous sort, which is occasionally grown as timber, being made use of in turnery, as well as for the cogs of mills and other similar purposes.

There are two species of this tree, the *common hornbeam*, and the *hop hornbeam*, but which afford the following varieties; as the *eastern hornbeam*, the *flowering hornbeam*, the *Virginia flowering hop hornbeam*, and the *American hornbeam*. The common hornbeam is a native of Europe and America, while the hop hornbeam is met with in Italy and Virginia. The common sort grows to the largest size, and is probably the best kind for the purposes of timber.

All the sorts of these trees are capable of being increased, either by seeds or from layers. The layer method succeeds at almost any season of the year. The seeds may be sown in the seed part of the nursery any time in the autumn, after they have been a little dried upon a mat, or otherwise, for the purpose. This is best done in narrow beds to the depth of about two inches, which should be kept perfectly clean and free from weeds. They must continue in these beds until the second spring, when they come up, and require to be kept free from every sort of annoyance, being watered in very hot seasons. About the third spring the young plants may be set out in the nursery ground, where they may continue

tinue

tinue until they are wanted for being planted as standard trees.

In the layer method, a few good plants should be provided for the purpose of stools; which in the Eastern fort may be planted at a yard distant, but with the others a yard and a half, or even two yards apart. As soon as these plants have made a proper number of shoots, they should be layered or laid down into the ground in the autumnal months, and in the course of about a twelvemonth they will generally become well rooted; at which time, or in the winter or early spring, they may be taken off, and planted out in the nursery manner, taking care to brush up or mould the stool well, for the future produce of young shoots for additional supplies of layers. The plants in the nursery should be allowed about a foot or a foot and a half, the rows being at the distance of two feet. They may continue in this situation until they are wanted for being finally planted out, being carefully weeded, and the mould well stirred about them in the rows, by winter digging, &c. The Virginia hornbeam frequently throws out two leading shoots, which afterwards contend for the mastery. Where this is the case, that which appears the best should be preserved, the other being removed by means of the knife. If this be neglected the trees will be liable to become forked in most cases, and of course less valuable to the planter.

The common hornbeam affords excellent stakes and edders, besides fuel wood and charcoal. The timber produced by it may be ranked with those of the beech and fycamore; but its principal superiority consists in its excellence for the purposes of *screen fences* for sheltering gardens, nursery grounds, and different sorts of young plantations, from the severity of bad seasons, &c. It bears cutting in, pruning, and clipping, extremely well, and, from its retaining its leaves during the winter season, becomes particularly close and impenetrable to the winds and storms, keeping up a very steady temperature of the atmosphere about the plants which it shelters. On this account also, it is found beneficial to be planted in mixture, or in occasional rows, with many tender sorts of trees in high exposed aspects, in the manner of the birch, to which it is preferable, as affording greater warmth in the winter. This sort of tree should perhaps be more attended to as a nurse for young exposed plantations of trees, than has hitherto been the case, in consequence of its qualities in this way being but imperfectly known.

The eastern fort is particularly valuable where low hedges of deciduous trees are wanted, from its inferior growth, and the smallness of its leaves and closeness of the branches.

HORNBEAM *Pollengers*, a denomination given by some to trees of this species, which have been lopped, and are of about twenty years growth. See TREE.

HORNBEAM *Wood, Petrified*, in *Natural History*. In a breach of the embankments or tide walls of the Thames, which happened near Purfleet, as described in the Philosophical Transactions, N^o 325, the Rev. W. Derham distinguished hornbeam among the other woods and vegetable products found a great way below the surface of the marshes; belonging, however, to the class of recent or peat fossils, and not to those of the strata.

HORNBERG, in *Geography*, a town of Wurtemberg, in the Schwartzwalde; 38 miles S.W. of Stuttgart.—Also, a town of Germany, belonging to the Teutonic knights, near the Neckar; 18 miles E. of Heidelberg.

HORNBURG, a town of Westphalia, in the principality of Halberstadt, on the Ilse; 10 miles N.E. of Goslar.

HORNBY, is a small market town and chapelry in the parish of Melling, hundred of Lonsdale, Lancashire, England. It is seated on the eastern banks of the river Loyne or Lune, over which is a stone bridge of three arches. A religious hospital, or priory, was established here at an early period; and at the dissolution was granted to the Monteagle family, who also possessed an old baronial mansion called Hornby castle, which stands on an eminence about half a mile from the town. According to Camden, this "noble castle was founded by N. de Mont Begon, and owned by the Harringtons and Stanleys, barons of Monteagle, descended from Thomas Stanley, first earl of Derby." It has a large square tower, and a lofty round one; has lately undergone a complete repair; and is now the property and residence of John Marsden, esq. Hornby church, which is subordinate to that of Melling, is a neat edifice, and distinguished by an octagonal tower. Hornby is distant from London 248 miles, and contained, according to the late return, 87 houses, and 414 inhabitants. The cotton manufactures constitute the chief business of the place. A fair or market is held every alternate Tuesday for cattle; here is also an annual fair of two days. *Beauties of England and Wales*, vol. ix.

HORNCASTLE, a market town and parish in a foke of that name, in Lindsey division of the county of Lincoln, England, is situated upon an angular piece of land formed by a small rivulet named Waring, and the river Bain. The latter is navigable from the Witham to this place. The town derives its name from *horn* or *byrn*, in Saxon signifying an angle or corner, and a castle or fortification. Traces of the castle are yet visible; the whole formerly occupied an area of nearly twenty acres. The foundations shew that it was in the form of a parallelogram, and inclosed a great part of the present town. Numbers of Roman coins have been found here; and there lately existed, near the river, one of those intricate circles called Julian's bower. These circumstances, and its situation on a lingula or tongue of land, induced Stukely to consider it a Roman station, and to place here the Bannovallum of the geographer Ravennas. The town was incorporated in the time of queen Elizabeth, with the privilege of holding a weekly market on Saturdays, and an annual fair; two other fairs have been since established. A considerable trade in leather is carried on here; the place being principally occupied by tanners. Horncastle is 139 miles N. from London, and in the year 1801 contained 403 houses, and 2015 inhabitants. Here are a good grammar, and a charity school. *Beauties of England and Wales*, vol. ix.

HORNCASTLE Navigation, was made, in pursuance of acts of parliament obtained in 1792 and 1800, from the old Witham river near Tattershall, to the bridge in the town of Horncastle, a distance of about 11 miles, in the county of Lincoln. See CANAL.

HORNE, in *Biography*. See HOORNE.

HORNE, GEORGE, a prelate in the church of England, was born at Otham, near Maidstone, in Kent, in the year 1730. His father, who was rector of Otham, undertook the early classical education of his son, for which he was perfectly qualified. When he was thirteen years of age, he was sent to the Maidstone grammar school, then under the care of a master eminent for his knowledge in ancient literature. A Maidstone scholarship in the university of Oxford becoming vacant, he was, when he was about fifteen years of age, sent to the University college, where he applied himself with so much diligence and assiduity to his studies, that he was greatly distinguished among his contemporaries, as well for

his attainments in polite literature, as for that species of knowledge which is subservient to the illustration of the scriptures. In the year 1749 he took his degree of B.A.; and in the following year, upon a vacancy taking place in a Kentish fellowship at Magdalen college, he was elected to fill it. Mr. Horne at this time had been deeply tinctured with the mysteries of Hutchinsonianism, which led him to do his utmost to bring discredit on the system of the immortal Sir Isaac Newton. What he published on this occasion, without his name, he was sincerely ashamed of afterwards, and never suffered it to be reprinted. In 1752 he took his degree of M.A., and in the same year engaged in a controversy on the subject of the Cherubim, in the Gentleman's Magazine. His object was to prove that the Cherubims were a representation of the Trinity. In 1753 he entered into orders, and soon obtained a high reputation as a preacher, on account of the excellence of his compositions and the gracefulness of his elocution. In 1764 Mr. Horne was admitted to the degree of doctor in divinity, and in 1768 he was elected president of Magdalen college, and in 1771 he was appointed chaplain in ordinary to his majesty, in which capacity he officiated for ten years. In the following year, when a number of the clergy were about to apply to parliament for relief in the matter of subscription to the liturgy and the thirty-nine articles of the church of England, Dr. Horne did all in his power to defeat their object. He was next appointed vice-chancellor of the University, in which station he continued till the month of October 1780, and no one ever presided in that post with a more conscientious attention to its duties, or a greater share of popularity. The vice-chancellorship introduced him to the acquaintance of Lord North, by whose interest he was promoted to the deanery of Canterbury, in which situation he acquired the respect and esteem of all, and frequently gratified the public by preaching in the cathedral. In 1790 Dr. Horne was advanced to the episcopal see, by being nominated to the bishopric of Norwich, soon after which he resigned his presidency of Magdalen college. At this period, his health, which had ever been delicate, was in a precarious state, and after he had taken possession of his see, his friends saw, with extreme sorrow and regret, that he declined very rapidly. From two visits to Bath he received sensible benefit, and in the autumn of 1791 he set out on a third visit to the same place. During his journey he was attacked with a paralytic stroke, from the effects of which he never recovered, though he was enabled to reach to the end of his journey. After lingering for some weeks, during which he retained the full possession of his faculties, and displayed exemplary patience, composure, and cheerfulness; he died at Bath on the 17th of January 1792, in the sixty-second year of his age, animated by those hopes which spring from the consciousness of a well spent life, and the promises of the gospel. The works of this excellent divine were numerous, and many of them valuable. His principal piece was a "Commentary on the Book of Psalms, &c." which made its appearance in 1776, in two volumes 4to. It was his favourite performance, and had cost him the best part of twenty years in the composition. Dr. Horne was distinguished by a considerable share of various learning, which he consecrated, according to his judgment, to the cause of truth, and the best interests of mankind. His virtue was sincere and ardent, and his life exemplarily virtuous.

HORNECK, ANTHONY, a learned divine, was born in the lower Palatinate in 1641, and educated at Heidelberg under Spanheim. At the age of 19 he came to England, and entered himself of Queen's college, Oxford, of which

he was afterwards the chaplain. He was now incorporated M.A. from the university of Wittemberg, and not long afterwards obtained the vicarage of Allhallows in Oxford. He retained this living only about two years, and in 1665 removed into the family of the duke of Albemarle, in the capacity of tutor to his son Lord Torrington. The duke presented him with the rectory of Doulton in Devon, to which was afterwards added a prebend in the cathedral of Exeter. In 1671 he became preacher at the Savoy, and in 1693 prebendary of Westminster. He was also honoured with the appointment of chaplain to King William and Queen Mary. He died in 1696 of a severe attack of the stone in the fifty-sixth year of his age. He was a man of very extensive learning, and particularly conversant in the Oriental languages, ecclesiastical history, controversial theology, and casuistry. Few men, it is said, were so frequently consulted in cases of conscience as Dr. Horneck. He was author of several pious and learned works, which are as judicious as they are learned, and which are still known and admired. Gen. Biog.

HORNED, a term employed, in some districts, to signify the goring or wounding with the horns of cattle.

HORNED Cattle, a term often made use of by farmers to signify neat-cattle, or animals of the low kind.

HORNED Poppy. See **POPPY**.

HORNET, **CRABRO**, in *Entomology*, a species of *Vespa*; which see.

HORNET-fly, a very large two-winged fly, which has the shape and colours of the hornet, and is, at first sight, scarce to be distinguished from it. The principal colour of the body of this fly is yellow; but it has two long and large black lines placed transversely on it, and has a black corcelet, and a yellow head.

These lay, at a proper season, a large number of oblong white eggs, which hatch into large and long worms, whose chief food is the worms and nymphs of the humble bees. The worm of this fly is continually found in the nests of these bees, where it never meddles either with the wax or honey, but preys only on the young offspring of the creature.

HORNGELD signifies a tax, within the forest, to be paid for the feeding of horned beasts. See **GELD**.

"Quietum esse omni collectione in foresta de bestiis cornutis, &c. Et sint quieti de omnibus geldis, et danegeldis, et wodgeldis, et fenegeldis, et horngeldis, &c."

To be free of horngeld, is a privilege granted by the king to such as he thinks good.

HORNHEAD, in *Geography*, a promontory on the north-western coast of Ireland, at the extremity of a small peninsula, called by the same name, in the county of Donegal, province of Ulster. It is supposed to have been mentioned by Ptolemy under the name of Boreum promontorium, and it is still sometimes called North Cape. Hornhead is the western point of Sheephaven, a harbour little frequented, and was probably called from two sharp summits like horns at the top of the cliff, which are a good object for the mariner. The peninsula of Hornhead has been pointed out by Dr. Hamilton (Transactions of the Irish Academy) as exhibiting the effects of drifting sands in a striking manner. In 1787 it contained vestiges of enclosures so small and so numerous, as to mark the former residence of a number of families in a spot which then exhibited nothing but

"————— A desert, salt and bare

The haunt of seals, and orcs, and seamews' clang."

Near Hornhead is a curious and frightful phenomenon called M'Swine's gun. By decomposition of part of the rock,

rock, the waves have perforated a cave many yards in diameter, which extends about sixty feet into a rock, making part of the mainland, and nearly horizontal with the level of the sea at high and low water-marks. When the wind blows due north and the tide is half in, this gun of M^r Swine's is seen to spout sea-water far higher than the eye can reach, with an explosion that may be heard at a distance of above twenty miles. Hornhead is near Dunfanaghy. N. lat. 55° 13'. W. long. 7° 51'.

HORNING, in *Scott's Law*, a writ issuing from the signet, in his majesty's name, at the instance of a creditor against his debtor, commanding him to pay or perform within a certain time, under pain of being declared a rebel, and by a caption put in prison.

HORNIUS, GEORGE, in *Biography*, was born in the Palatinate about the close of the 17th century. He was in high estimation as a writer of history; and his chief works are "Historia Ecclesiastica ad ann. 1666:" "De originibus Americanis:" "Geographia vetus et nova:" "Historia Philosophica." He visited England, and attached himself to the Presbyterian party; and on his return he occupied the chair of history in the universities of Harderwyck and Leyden. He died in 1750.

HORNOS, in *Geography*, a town of Sweden, in West Bothnia; 15 miles S. W. of Umea.

HORNOY, a town of France, in the department of the Somme, and chief place of a canton, in the district of Amiens; 15 miles W.S.W. of Amiens. The place contains 1190, and the canton 10,661 inhabitants, on a territory of 152½ kilometres, in 24 communes.

HORNSPIPE, in *Music*, the name of an instrument, and of a tune. The hornpipe air, so frequently danced by our sailors and active stage dancers, is perhaps the only national tune, or melody, which we can call our own. It is of high antiquity, and can be traced to the ancient Britons, perhaps before the invasion of Julius Cæsar, or the Saxons. The instrument, in our old authors, is called the *Pip-corn*, or pipe of Cornwall. And when the Britons were driven by the Saxons, some into Wales, some into Armorica, or Brittany, and some into Cornwall, we may suppose the instrument and tune to have been preserved in the last mentioned province, and to have retained its name. The instrument called a hornpipe, though unknown in England, was a few years ago so common in Wales, according to the late honourable Danes Barrington, that even the shepherd's boys used to play on it. It consists, says Mr. B., of a wooden pipe with holes, at proportional distances, and a horn at each end, the one to receive the wind from the mouth of the player, and the other to produce the sounds, as modulated by the performer. Mr. Barrington communicated to the Antiquarian Society a delineation and description of this rustic instrument (*Archæologia*, vol. iii. p. 33.), and conjectured that it originally gave the name to the tune called a hornpipe.

Chaucer, in his *Romant of the Rose*, fol. 135, mentions this instrument.

Controu he would, and soule faile With HORNSPIPES of CORNEWAILE.

Mr. Jones, in one of his tracts, says that the pigbörn, or hornpipe, is peculiar to the isle of Anglesea; but the word, in old English and French authors, implies a tune as well as an instrument.

The Lancashire hornpipes, Cheshire rounds, and some of our very old country dances, are, perhaps, genuine English melodies; but melody, till after the invention of the opera at Florence in 1600, was little cultivated in any part of

Europe. We had very good church music in our cathedrals, from the time of Tallis and Bird, to the arrival of Handel, in 1710; but being set to English words, it never reached the continent.

HORNSEY, or HORNSEA, in *Geography*, a market town and parish in the division of Holderness, and East Riding of the county of York, England, is seated near a mire, or lake, on the coast. Of this town our topographers have not recorded any historical particulars. Gough, in his addition to Camden's *Britannia*, merely states that Hornsey "has a high spire, formerly a sea mark, but now much ruined through the inability of the inhabitants to repair it. An inscription in the town says that it was once ten miles from the sea; though at present only one. Not many years ago a small street, called Hornsey-bek, adjoined to the sea, was washed away, except two or three houses; and about Skipfic, a few miles north of Hornsey, they have a tradition of a town called Hide being devoured by the sea. Amber is found in large masses on this coast." There are a small weekly market on Mondays, and two annual fairs. In 1800 the town consisted of 133 houses, and 533 inhabitants.

HORNSEY, a parish in the hundred of Ossulston, and county of Middlesex, England. The village is five miles north of Holborn-bars, London, and is pleasantly seated in a valley, through which the New river is conducted in its artificial channel. The parish consists of about 2200 acres of land, of which 50 only are arable, about 120 wood, 150 waste, or common, and the remainder meadow and pasture. Besides the village of Hornsey, the following hamlets are within the parish: Crouch-end, Mufwell-hill, Stroud-green, and a considerable part of Highgate.

The manor of Hornsey has belonged, from time immemorial, to the bishops of London, who had formerly a palace here. This is supposed to have stood on a spot called Lodge-hill, where are still to be seen the remains of a moat. In this parish, between Highgate and Hornsey, the New river was formerly carried over a valley by a wooden aqueduct, 178 yards in length. A more lasting channel, of clay, &c. was made for it in 1776. Many of the houses here are the residences of London merchants. From the boldness of the hills around, and finely wooded character of the country, Hornsey may be justly considered a very delightful and eligible place of residence. In the year 1801, the parish was estimated to contain 458 houses, and 2716 inhabitants. Lysons's *Environs of London*, 4to. vol. iii.

HORNSTANDET, a peninsula on the coast of Sweden, in the gulf of Bothnia, about 30 miles in circumference. N. lat. 61° 39'. E. long. 17° 16'.

HORNSTEDTIA, in *Botany*, is a genus named by Retzius in honour of Dr. Clas Frederick Hornstedt, lecturer on natural history and medicine at Lincopin in Sweden, and Fellow of the Academy of Sciences at Stockholm. Retz. *Obf. fasc.* 6. 18. Willd. *Sp. Pl.* v. 1. 9.—Clas and order, *Monandria Monogynia*. Nat. Ord. *Scitamineæ*, Linn. *Canna*, Juss.

Gen. Ch. *Inflorescence* a conical spike, gaping at the top, nearly radical. *Calyx* two-cleft. Tube of the *corolla* long, thread-shaped; limb double; the exterior coat three-cleft; nectary tubular. *Capsule* of three cells, oblong. *Retzius*.

Obf. The two species of this genus described by Retzius, and which we are about to mention, are supposed by Dr. Smith to belong to different genera. He imagines that *H. Scyphus* is an *Amomum*, and *H. Leonurus*, a *Kempferia*, but as this is merely a suggestion, we retain the genus till we learn further particulars concerning it from Dr. Roxburgh.

1. *H. Sapphus*, Retz. Willd. n. 1. (*Amomum Seypliferum*; Retz. *Obf. fasc. 3. 63*)—"Leaves downy underneath."—A native of groves at the foot of the mountains near Malacca—Roots spreading horizontally. Stems about eight feet high, very tough. Leaves sessile, smooth above. Flowers in clusters, monopetalous, of a fine scarlet colour. Seeds numerous, club-shaped, oblong. The plant has scarcely any smell.

2. *H. Leonurus*. Retz. Willd. n. 2. (*Amomum Leonurus*; Retz. *Obf. fasc. 3. 69*)—"Leaves smooth, fringed."—Found in the thickest recesses of groves in Malacca.—Root simple, having a hot aromatic taste. Stems simple, solitary, nodding towards the top. Leaves alternate, fringed, with golden-coloured bristles, smooth on both sides, smelling like cloves. Calyx shorter than the tube of the flower. Germen inferior, nearly globose, small, covered with dark ferruginous hairs. Seeds numerous.

Neither of these species appear to have been known to Rumphius, Rheede, Plunkenet, nor any other author who has applied himself to the description of Oriental plants.

HORNSTEIN, in *Natural History*, is a name given in Germany to the siliceous stone, called in England chert, or chert.

HORNY EXCRESCENCES, in *Surgery*. It appears, from some instances on record, that excrescences of a horny nature have been met with on the human subject, which, although they have much excited the attention of naturalists, must be considered entirely as *Lusus Naturæ*.

A remarkable case of this description is that of a female who had two complete horns growing on her head, one of which, with the portrait of the woman, is preserved in the British Museum, and the other at Oxford.

A far more recent instance, however, has been obligingly communicated to us by Dr. William Roots of Kingston on Thames, who, in February 1811, amputated an excrescence of this sort, exactly resembling a ram's horn, from the head of a man, between fifty and sixty years of age, a drawing of which in its growing state, as well as the horn itself, he has presented to the collection of Mr. Astley Cooper.

The account given by Dr. Roots of this extraordinary case is, that John Kennedy, a gardener at Thames Ditton in Surrey, in the year 1796 had a tumour growing on the superior part of the occiput, which was taken off with the knife by the doctor's father in about three years from its commencement. Soon after its removal, a horny substance began to make its appearance on the same place, which continued growing for four years, till it accidentally fell off in a most unexpected manner, being at that time not more than three inches in length; and it should be observed, that the surface of the part it grew from, on its dropping off, was perfectly smooth, without any the slightest hemorrhage, and resembling the superficies of the Itag's head, when his horns have recently dropped. In a short time after a new horny sprout shot forth, which, as it grew, took on the exact form and crooked figure of a ram's horn, and having increased during seven years, without any disposition to fall off, to the great inconvenience of the poor man, he consented at length to its removal; in the performance of which, from the parts underneath being very vascular, a considerable hemorrhage ensued.

Now it appears probable from this, says the doctor, that the horn, had it been suffered to remain longer on the head, would have attained a much larger size, nature having in a playful mood most abundantly supplied it with vessels for that purpose. Its having likewise been shed in the former in-

stance without bleeding, induces Dr. Roots to conclude, that as the sources of its nutriment continued open, it had not arrived at that state of perfection, when the gradual closing of the vessels would occasion a spontaneous removal, without any hemorrhage taking place, as is always observed to be the case with animals who drop their horns at regular and stated periods. Some years since we saw Sir James Earle remove a complete horn, about three inches long, from the scrotum of a patient in St. Bartholomew's hospital. We have always believed, that all horny excrescences, which are occasionally formed on the skin of the human subject, are originally encysted tumours, the cyst of which very curiously assumes the power of secreting horn, instead of fat, a pappy substance, or a fluid like honey, as commonly happens in the respective cases of steatoma, atheroma, and meliceris. We think that the particulars of the case, communicated to us by Dr. Roots, tend to corroborate this opinion, since, before any horn made its appearance, there was a tumour, and, after the first horn dropped off, a surface, which was quite smooth, which did not bleed at all, and which, in fact, must have been a part of the cyst, presented itself to notice. In the case of the horn, which was cut off in St. Bartholomew's hospital, the truth of the preceding sentiment, concerning the formation of horny excrescences on the human race, was almost demonstrated. There was at first a tumour, which burst, and from the inside of which the horny matter was gradually protruded.

HORNYGOLD'S KEYS, in *Geography*, islets and rocks on the Spanish main, near the Mosquito shore. N. lat. $15^{\circ} 40'$. W. long. $82^{\circ} 18'$.

HOROCHAW, a town of Poland, in Volhynia; 32 miles S.W. of Lucko.

HORODEK, a town of Russian Lithuania, in the palatinate of Wilna; 68 miles S.E. of Wilna.—Also, a town in the palatinate of Brzesc; 38 miles S.E. of Brzesc.

HORODICTIC QUADRANT. See QUADRANT.

HORODISCZE, in *Geography*, a town of Austrian Poland, in Galicia; 60 miles E. of Lemberg.—Also, a town of Lithuania, in the palatinate of Minsk; eight miles S.E. of Minsk.

HORODLA, a town of Austrian Poland, in the palatinate of Belz, on the Bug; 32 miles N. of Belz.

HOROGRAPHY, compounded of $\omega\rho\alpha$, *hour*, and $\gamma\rho\alpha\gamma\alpha$, *I write*, the art of making or constructing dials; called also, *horologiography*, *gnomonica*, *sciatherica*, *photosciatherica*, &c. See DIALLING.

HOROLOGIOGRAPHY, the art of making or constructing dials. See DIALLING.

HOROLOGIUM, $\omega\rho\omega\lambda\omicron\gamma\iota\omicron\iota\omicron$, composed of $\omega\rho\alpha$, *hora*, *time*, *hour*, and $\lambda\omicron\gamma\omicron$, *speech*, *discourse*, a common name, among ancient writers, for any instrument or machine for measuring the hours. See CHRONOMETER.

Such are our clocks, watches, sun-dials, &c. See CLOCK, WATCH, DIAL, and CLEPSYDRA.

Modern inventions, and gradual improvements, have given birth to some new terms that come properly under this head, and annexed new meanings to others totally different to what they had originally. All chronometers that announced the hour by striking on a bell were called clocks; thus, we read of pocket-clocks, though nothing could seem more absurd than to suppose that a clock, according to the modern idea, should be carried in the pocket. In like manner, all clocks that did not strike the hour were called watches, or time-pieces; and the different parts of a striking clock were distinguished by the watch-part, and the clock-part; the former, meaning that part which measures the time, and the latter, the part which proclaims the hours. In the report of Sir

Isaac Newton to the house of commons, anno 1713, relative to the longitude act, he states the difficulties of ascertaining the longitude by means of a watch; yet it is obvious, from several circumstances, that his remarks were directly to be understood of a time-piece regulated by a pendulum; for his objections are founded on the known properties of the pendulum, some of which differ essentially from the properties of the balance and spring. It is also to be remembered, that all the attempts of Huygens for finding the longitude were by means of pendulum clocks, that did not strike the hour, and consequently, according to the language of the times, were called watches. At this time such machines for measuring time as are fixed in their place, are called clocks if they strike the hour; if they do not strike the hour, they are called time-pieces; and when constructed with more care, for a more accurate measure of time, they are called regulators. Some artists of late have affected to call such watches as were constructed for astronomical and nautical observations, by the name of *time-pieces*, probably to intimate that they possess the advantages of those constructed with a pendulum.

Mr. John Harrison first gave the name of time-keeper to his watch, for the performance of which he received from parliament the sum of twenty thousand pounds. See CHRONOMETER.

HOROLOGIUM, *Horologion*, is also a name the Greeks give to their liturgy, or breviary; because it contains the daily hours, or the several offices to be rehearsed each day.

The Greeks call it *ωρολόσιον*, which answers to what in Latin and English we call *diurnum*, or *diurnal*.

The *ωρολόσιον* is the breviary of the Greeks.

HOROMETRY, the art of measuring or dividing the hours, and keeping an account of time.

HOROPTER, in *Optics*, is a right line drawn through the point where the two optic axes meet, parallel to that which joins the centres of the two eyes, or the two pupils.

Such is the line A B (*Plate VI. Optics, fig. 3.*) drawn through the point of concurrence C, of the optic axes of the eyes D and E, parallel to H I, which joins the centres of the eyes H and I.

It is called horopter; as being found, by experience, to be the limit of distinct vision.

The horopter has several properties in optics, which are described at large in Aguillonius, *Opt. lib. ii. Diff. 10.*

HOROPTER, *Plane of the*. See *PLANE of the Horopter*.

HOROSCOPE, in *Astrology*, the degree or point of the heavens rising above the eastern point of the horizon, at any given time when a prediction is to be made of a future event; as, the fortune of a person then born, the success of a design then laid, the weather, &c.

The word is composed of *ώρα*, *hora*, *hour*, and the verb *επιπροσέχει*, *specco*, *considero*, *I consider*. The Latins call it *cardo orientalis*; sometimes *ascendens*. See *ASCENDANT*.

They were formerly so infatuated with horoscopes, that Albertus Magnus, Cardan, and others, are said to have had the temerity to draw that of Jesus Christ.

HOROSCOPE is also used for a scheme, or figure, of the twelve houses; *i. e.* the twelve signs of the zodiac, wherein is marked the disposition of the heavens for any given time.

Thus we say, to draw a horoscope, construct a horoscope, &c. We call it, more peculiarly, *calculating* a nativity, when the life and fortune of a person are the subject of the prediction; for they draw horoscopes of cities, great enterprizes, &c. See *HOUSE*.

HOROSCOPE, *Lunar*, is the point which the moon issues out of, when the sun is in the ascending point of the east.

This is also called the *part of fortune*.

HOROSCOPE is also a mathematical instrument, in manner of a planisphere; but now disused.

It was invented by J. Paduanus, who composed a special treatise thereon.

HORPS, LE, in *Geography*, a town of France, in the department of Mayenne, and chief place of a canton, in the district of Mayenne; eight miles N. W. of Vilaine. The place contains 1618, and the canton 8793 inhabitants, on a territory of 182½ kilometres, in 10 communes.

HORREA, in *Roman Antiquity*, were public magazines of corn and salt meat, out of which the soldiers were furnished on their march in the military roads of the empire.

Horrea was also the name which they gave to their *granaries*; which see.

HORREBOW, PETER, in *Biography*, a celebrated Danish astronomer, and professor of that science at Copenhagen, was born at Lægsted, in Jutland. He studied at Aalborg under very unfavourable circumstances, being obliged, at the same period, to submit to various kinds of labour. In 1714, he was appointed professor of mathematics at Copenhagen, and in 1725 he was elected a member of the Danish Academy of Sciences. He died in 1764, at the great age of 85. He was author of many works connected with his favourite pursuits, among which were "Copernicus Triumphans, five de Parallaxi Orbis Annui;" "The Elements of Astronomy;" "The Elements of Mathematics;" &c. &c.

HORROR, HORROUR, strictly signifies such an excess of fear as makes a person tremble. It is a compound of admiration and fear, not without an occasional mixture of pleasure, from which, when predominant, it is denominated a pleasing horror.

HORROR, in *Medicine*, nearly synonymous with *rigor*, is used to denote that transient *shivering*, accompanied by a sensation of cold, which is among the first symptoms of febrile diseases in general. Hippocrates considers it as expressive of a lesser degree of shivering than the term *rigor*; but a few persons, he says, employ the word to denote a greater degree of chilliness than rigour. (See his *Treatise de Flatibus*.) Celsus considers the *horror* as a general shaking, such as often occurs in the outset of a paroxysm of ague. "Frigus voco, ubi extremæ partes membrorum inalgescunt; *horrorem* ubi totum corpus intremuit." (*De Medicina*, lib. iii. cap. 3.) Sennertus again tells us, that horror implies an agitation of skin only; while rigor signifies a shaking of the whole body; and this appears to be the sense in which the two words are most commonly understood. Sennertus *Opera*, vol. i. p. 387.

HORROR of a *Vacuum*, was an imaginary principle among the ancient philosophers, to which they ascribed the ascent of water in pumps, and other similar phenomena, which are now known to be occasioned by the weight of the air. See *AIR*.

HORROX, JEREMIAH, in *Biography*, was born at Toxteth, near Liverpool, about the year 1619. He received his academical education at Emanuel college, Cambridge, after which he began to apply himself very diligently to the study of astronomy, but as at this period his circumstances were very moderate, and as he could have no access neither to books nor instruments, he was unable to make any considerable progress in the pursuit. About the year 1636 he became acquainted with Mr. Crabtree, whose genius led him to the same kind of studies, and with whom Mr. Horrox corresponded, and they both communicated their discoveries to Mr. Foster, professor of Gresham college. Mr. Horrox, by the countenance and assistance of his friend, pursued his studies with renewed vigour, and having procured instru-

ments and the necessary books for the purpose, applied with great diligence to the making of observations. Scarcely, however, had he entered the career of discoveries, before he was suddenly cut off by death in the year 1640-1, when he was only 22 years of age. Of the loss which the world sustained by this melancholy event, some notion may be formed from the writings which he left behind him. He had just completed his "Venus in Sole visa," which was published at Dantzic in 1662, by Hevelius, together with his own "Mercurius in Sole visus," and illustrated with that astronomer's notes. The remaining papers of our young astronomer were digested and published by Dr. Wallis in 1673, under the title of "Opera Posthuma," &c. Two things are deserving notice, and will perpetuate the memory of this very extraordinary young man. He was the first who ever predicted or even saw with a scientific eye the passage of Venus over the sun's disk, and though he was not aware of the great use that was to be made of it, in discovering the parallax and distance of the sun and planets, yet he made from it many useful observations and improvements on the theory of Venus. The other circumstance was his new theory of lunar motion, which Newton himself made the ground-work of his astronomy relating to the moon; ever speaking of Mr. Horrox as a genius of the first rank.

HORS de son fee, q. d. out of his fee, in Law, is an exception to avoid an action brought for rent, or other service, issuing out of certain lands, by him that pretends to be the lord. For if the defendant can prove the land to be without the compass of his fee, the action fails.

HORSE, in *Zoology*. See *EQUUS*.

The horse makes the subject of a very extensive art called horsemanship, consisting of divers subordinate arts or branches.

From the same beast also arise the professions of chivalry, knighthood, &c.

Authors are divided as to the time when men first began to mount horses. The scholiast of Euripides, and Eustathius on the second book of the Iliad, speak as if the ancients had been unacquainted with the use of saddle horses, and had only used them to draw chariots, &c. They add, that courses on horse-back were not introduced at the olympic games before the fifteenth Olympiad. But this can scarcely be; because the centaurs, to whom the invention is attributed, lived long before that time. Besides, Homer, though he mentions only chariots in his account of the siege of Troy, speaks of riding so familiarly in some parts of his Iliad and Odyssey, that it must have been practised among the Greeks before he composed either of these poems. In the fifteenth book of the Iliad he represents the strength and activity of Ajax, when he fought in defence of the Grecian ships that were attacked by the Trojans, and leaped from one ship to another, by the readiness and address with which a skilful horseman would vault from the back of one horse to that of another; and his ability to defend many ships at once by that of the accomplished rider, who is capable of managing and controuling several horses at the same time. This comparison proves, not only that riding was commonly known at the time when Homer wrote, but that it must have been studied and cultivated with great care and attention. In the fifth book of the Odyssey, the poet compares Ulysses, shipwrecked and sitting astride a plank which was floating on the waves, to a man bestriding a horse, and keeping his seat in spite of the motions which the animal could make. Herodotus, in Thalia, speaks of hunting on horseback, as an exercise practised in the time of Darius; in Melpomene, likewise, he says, the Amazons hunted on horse-back, with their husbands, the Sarmatians. Xenophon says, that Cyrus

hunted on horse-back, when he had a mind to exercise himself and his horses.

It appears, likewise, from Pausanias, that there were horse-courses even in the time of Hercules, the institutor of the Olympic games.

It also appears, from the most ancient history extant, viz. the history of the Bible, that the horse was made subservient to the will of man in the earliest times, and therefore the use of this animal is probably almost coeval with mankind. See Gen. ch. xlvii. 17. Job, xxxix. 18, 19. Gen. l. 9. Exodus, xiv. 9.

From the two last cited passages, in which chariots and horsemen are named together, it appears probable, that the use of chariots and the art of riding were introduced about the same time, the latter being a little prior to the former; and Egypt seems to have been the country to which mankind are indebted for the equestrian art, though the precise period of time in which it was first practised cannot so easily be ascertained. It is certain, however, that when Jacob came into Egypt, he found the inhabitants perfectly acquainted with the horse, and using it in its two-fold capacity of carrying and drawing. From hence it was conveyed to the Ethiopians, Arabs, Indians, Persians, Parthians, Armenians, Scythians, &c.

The Ethiopians, as we learn from Herodotus, possessed a breed of horses, and were acquainted with the art of riding; accordingly he describes them as a nation of cavalry that attended Xerxes in his expedition against Greece. We have no information with respect to the equestrian history of the ancient Arabs; although in later times they have become so famous for riding, that they may be styled a nation of horsemen. The inhabitants of India were accustomed to use horses from the earliest times; and Herodotus asserts, that the troops of this country, which attended Xerxes in his famous march against Greece, fought on horse-back, as well as employed chariots in war.

The Persian horses have been always famous for beauty, vigour, fire, and other eminent qualities, and so celebrated for speed, that their very name in the language of the country signifies what may be rendered by the word "wind-foot," a term emphatically expressive of their swiftness. The ancient Persians were so fond of them, and thought the act of managing them so becoming and necessary a duty, that they taught their children to ride at the age of five years, as Herodotus relates. Vegetius describes the horses of this country as most valuable for the saddle, being safe, gentle, and very agreeable to the rider, constituting a very considerable part of the revenue of their owners, and very profitable to those who could support a fine breed. Their paces were singularly graceful, as well as fast and easy, so as to relieve rather than fatigue the rider. They were quick and nimble, but subject to tire on a long march or journey; inclined to obstinacy and rebellion, unless curbed and subdued by discipline and exercise; but notwithstanding their heat and anger, not difficult to be pacified; always maintaining a graceful carriage, arching their neck, and bending it to such a degree as almost to make their chins lean upon their breasts; while their pace was something between a gallop and amble, answering to what the French call "aubin," and we a "rack."

The Parthians were very eminent for the skill with which they managed their horses, and their manner of fighting upon them; and they are described as having such dexterity and suppleness of body, and such a command over their horses, that they could turn themselves round upon their backs with so much ease and readiness as to be able to draw their bows with the surest aim, and wound their enemies

HORSE.

even whilst they were flying from them; this manner of fighting being peculiar to them. The name of "Parthus" is derived from a Chaldean word which signifies "horseman." Their horses are said to have been very active and easy in their paces, which they formed by attention and practice. (See PAGE.) The Parthian horses were very hardy, and inured to incredible fatigue, as well as to travel a long time without food or water. Thus Propertius describes them (lib. iv. eleg. 3.).

"Quot sine aqua Parthus millia currat equus."

"How many miles can run the Parthian horse,
Nor quench his thirst in the fatiguing course?"

Armenia boasted of its breed of horses, hardly inferior to the Persian race. Vegetius spoke of the inhabitants of this country as being very careful in trimming and adjusting the manes of their horses. (See MANE.) Nisæa, a district of Armenia, boasted of its breed of very large and beautiful horses. The chariot of Xerxes, in his famous expedition, was drawn by horses of that country, which were chosen for the task, because they were the noblest that could be procured. Media was also a region eminent for its horses, and from its situation and properties, produced them of equal value with the neighbouring countries. The Scythians were proverbially famous, as in the terms "Scythæ equum," for their attention to horses. They preferred mares to horses, conceiving them to be more capable of service, and accordingly used them more than horses in war. The Sarmatians, both Asiatic and European, were distinguished horsemen, and had large breeds of horses. They used horses not only for riding, but offered them in sacrifice to their gods; they also eat their flesh, and drank their blood. Lucan (l. iii.) and Virgil (Georg. iii.) record this custom. The horses of Cappadocia have been much celebrated both by historians and poets, both for their swiftness and the stateliness of their action. The inhabitants of Numidia, Mauritania, Nafamonia, Massilia, and other adjacent tracts of the same region, are highly commended for having had horses of great swiftness and vigour; and more particularly for their peculiar manner of riding them, without a bridle or saddle, using a wand only, or switch to guide and command them. This breed of horses seems to have been the same with that of Lybia, or, as that tract is now called, Barbary, famous for its excellent horses, which were extolled for their speed, wind, and patience of fatigue. Xenophon, Oppian, and Ælian concur in commending them. The method above-mentioned, of guiding and governing horses by a wand or switch, is still practised in Barbary by the lower sort of people. The horses of Lybia are proverbially swift.

The colonies which came from Phœnicia and Egypt, in which equitation flourished, brought this art with them, and established it in Greece long before the siege of Troy, and with the art transplanted thither the horse, which was not originally a native of Greece. The Thessalian horses were the most famous of ancient Greece, and valued and admired not only by the inhabitants of that country, but by the most judicious and experienced of other nations. Mycenæ, Epirus, Lacedæmon, Argolis, Arcadia, Magnesia, Dalmatia, Ionia, the island Scyros, the Attic territories, and Elis in particular, were all distinguished by their breeds of horses. From Greece the art of horsemanship was transmitted to the Romans, who cultivated it with such diligence and zeal, that they were soon able to excel their masters. The Etrurian or Tuscan breed is praised by Oppian; and the Sardinian, Corsican, and Venetian horses are much commended. Agragas in Sicily, and Calpe and Tartessus

in Spain, are also celebrated for their horses. Asturias, Gallicia, and Andalusia, then called Bœtica, were known to produce the finest of their kind. The horses of Gaul were also held in considerable esteem by the Romans; and they were not unacquainted with those of the Germans, which are mentioned by Cæsar and Tacitus, but by the latter not much to their credit. Like the Armenians, the Romans always turned the mane on the right side. Varro and Virgil direct it to be so placed.

It was the custom, among the ancients, to impress some mark on their horses: the most common were, Σ, *sigma*, a Κ, *kappa*, and a bullock's head. Hence those marked with Σ's were called Σαυροεις; those with a Κ, Καππαριαι; and those with a bull's head, Βουκεφαλοι, *Bucephali*. It is, however, more probable that the famous horse Bucephalus owes his appellation to the resemblance which his head bore to that of a bull, and not to the impression of one which was burnt into his flesh, and was a mark in no wise peculiar to him, but common to all horses, so that he could not have been particularly distinguished by it. And Aulus Gellius, lib. v. cap. 2. expressly tells us that this was the fact; and that the head exactly resembled, in shape and figure, the head of a bull. This mark was stamped on the horse's buttocks and his harness, as appears from the scholiast in Aristophanes's *Clouds*, Hefychius, &c.

The Romans, as well as the Greeks, distinguished their horses by certain marks, which were burnt into the flesh: these were the initial letters of the owners' names, figures of animals and other devices, by which the horses were known and appropriated, frauds prevented, and the breeds and pedigrees, of which they were very careful, preserved and distinguished. It was also usual for them to give names to their horses, expressive of their country, qualities, or colour. The Sybarites, a voluptuous people of Calabria, are said to have taught the horses in their troops to move or dance in exact time to the sounds of musical instruments.

In modern times, Arabia is most distinguished for the excellence of its horses, and the address of its inhabitants in riding them.

The Arabians breed their horses for sale, and there is a considerable revenue arising from those that are sent out of the country, the tax being about ten pounds sterling for each horse. These people are scrupulously exact in preserving the pedigree of their horses for several ages; so that they know their parentage, alliances, and genealogy, distinguishing each breed by different appellations, and dividing the whole kind into three classes. The first class is called *noble*, being the most pure and ancient, without any mixture, on the side of the sire or dams. The second class is composed of horses, whose race, though ancient, has been mixed with plebeian blood, either on the male or female side, which nevertheless is deemed noble, but misallied. The last class comprehends the common horses, which are sold at a low price; but the two former sorts are extremely dear, the lowest-priced mares of the first class being worth five hundred French crowns, and some fetching even four, five, or six thousand livres.

When a stallion covers a mare among the Arabs, both being of equal quality, witnesses are called to be present on the occasion, who sign a certificate in the presence of a magistrate, in which the names of the horse and mare are mentioned, with their pedigrees. When the mare drops her foal, witnesses are called again, and another certificate is drawn up and signed; and these vouchers are given with the animal, like the deeds of an estate, when it is sold.

The Arabian horses are generally of a middling size, neat
and

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and clean in their shape and limbs, and of a thin and slender figure. Their keepers curry and feed them morning and evening, and only let them drink two or three times in the day. About March, when the grass is strong and plentiful, they foil them, and devote this season likewise to procreation; observing the custom, which we have probably derived from them, of throwing cold water upon the mare as soon as the stallion descends from her back. When the spring is past, the horses are taken from the pastures, and kept for the rest of the year without grass or hay, solely upon barley, with a certain portion of straw. When the colts are about eighteen months old, they shear the hair of their tails, in order to make it grow thicker and stronger. They begin to ride their colts at the age of two years, or two and a half at most.

The best breeds of this country are said to be sprung from the wild horses of the Desert, of which, many ages ago, a stud was composed, which increased the breed, and furnished Europe, Asia, and Africa with these noble animals. The best horses are, therefore, immediately or remotely descended from Barbs, descended from Arabians, whose climate is peculiarly favourable to the breed of horses.

The Arabian breed is propagated in Barbary, among the Moors, and even among the negroes on the banks of Gambia and Senegal, where they are fed with Indian corn, bruised and mixed with milk. Egypt, Turkey, and Persia are supplied with horses from Arabia. The Barbary horses are to be found in most countries of Europe.

The foreheads of these horses are generally long, slender, and ill furnished with mane, but rising distinctly and boldly out of their withers; their heads lean and small, and resembling that of a sheep; the ears handsome and well placed; the shoulders light, sloping backwards, and flat; their withers fine, and standing high; loins short and straight; flanks and ribs round and full, without having too large a barrel; their haunches strong and elastic; the croup often somewhat too long; the tail placed high; thighs well turned and rounded; legs clean, well made, and thin of hair; the sinews detached from the bone, but the pastern generally too long and bending; the foot good and sound. These horses are of all colours; but the most common sort is grey; they are generally cold and slow in their paces, and require to be roused and animated by the rider, when they will discover a great fund of vigour, wind, and speed. They are very light and nimble, formed for running, and are more valued in their offspring than for their own merit, being thought, when transported into foreign countries, to get colts which excel their sires in goodness; on which account they are valuable in studs.

The Algerines are said not to like to castrate their horses, but only squeeze their testicles when they are about three months old, and thus render them incapable of propagation.

It is thought that the horses of the kingdom of Morocco are the best, and next to them a breed called the mountain barbs, which are sure-footed, of a gentle disposition, and very attentive and docile. Their walk is free and bold, and their gallop very rapid.

In Turkey, Arabia, and Persia, they expose the dung of their horses in the sun, and when it is capable of being finely powdered, they spread it under them instead of litter, which gives their coat a beautiful gloss and lustre. The Persian horses are reckoned next in value to those of the Arabians.

The climate of India is unfriendly to horses, which are generally very small, and fed in the day-time with a little hay,

and at night with peas boiled with sugar and butter. They sometimes feed them in the rice-fields, and when flesh is plentiful, boil the offal to rags, and, mixing it with butter and some sorts of grain, form balls, which they thrust down the throats of horses. In a scarcity of provision, they give them opium. The horses of the country are naturally very vicious; and the Persian horses, being more gentle and tractable, are often valued at a thousand guineas each, while those of India sell for fifty or one hundred.

The Tartar horses are of a moderate size; but they are strong, nervous, proud, full of spirit, bold, and active. They are of a good size for the saddle, and are pacers by nature. Their owners, like the ancient Geloni and Sarmatians, make the animals supply them with food; for they eat their flesh at this day, as well as the curds, or "lac concretum" of the mare's milk, mentioned by many ancient writers. The Tartars have been famous in all ages, under different names, for their love of horses and skill in riding. The district, called Little Tartary, has a breed of small horses, which the inhabitants value so much, as never to permit them to pass into the hands of strangers.

Circassia, Mingrelia, and the adjacent parts, abound with horses of a better mould, and juster proportions than those of Tartary, and they are consequently admired and valued, more especially as they are equal to the greatest fatigue. Some of the islands in the Archipelago are furnished with good and valuable horses, especially Crete; but they are not entitled to any farther notice. The horses of Russia are not much regarded by other nations. They are small but hardy, and capable of enduring great fatigue. Those of the Turkish breed are handsome, and finely shaped, but too slight and weak for heavy cavalry. The Kalmuck horses are somewhat higher than the Russian common horses, and so tough and strong in their constitution, as to be able to run three or four hundred English miles in three days. They subsist, summer and winter, solely upon grass in the great deserts, which are between the rivers Don, Volga, and Yaik. They are collected in great herds of four hundred, five hundred, or even a thousand. They are excellent swimmers, and pass the river Volga, where it is from one to two miles broad, with great ease. The Nogay horses are a hardy breed belonging to the Tartars of that tribe, subject to the Kalmuck khan. The Turcomans, a free nation, living between the Caspian sea and the lake Aral, have horses of the same nature with those of the Nogay Tartars; and the horses of the Bashkirs are stouter and better than those of the Nogay tribe. The "step," or wild horse, is an horse of the Desert, of which there are three different kinds, which feed respectively together, in herds, or taboons, of thousands. All kinds of horses are eaten by the Tartars and Kalmucks; and a foal is reputed a great dainty. Mare's milk is a frequent drink, which, when kept and fermented, becomes inebriating. The Tartars of the Crim never undertake an excursion without allowing three horses to one rider. The Polish horses are very hardy, strong, and useful, but they are generally of a middling size. In the marshy parts of Prussia, and towards the mouth of the Vistula, there is a breed of good, tall, strong, horses, resembling those of Friesland, but of inferior value.

The horses of Sweden are low and small, and the Norway breed may be comprehended under the same description, but they are nervous, hardy, and active. Denmark, and also Holstein and Oldenburg, boast a large variety of horses, which have so much vigour, pride, courage, and grace, that for the coach, the services of war, and the manege, they can be surpassed by few, though they often fail with respect to elegance of limb and symmetry of parts; having thick fore-
heads,

heads, shoulders somewhat heavy, backs rather long, and croups too narrow to correspond with the foreparts. In the islands of Ferroe there is a race of horses of small growth, but strong, swift, and sure of foot, passing with ease and safety over high hills. They are never shod, and feed abroad without shelter both summer and winter. In Suderôc, one of these islands, they have a lighter and swifter breed than in any of the rest; the inhabitants catch their sheep, which are wild, by hunting them with a dog, and pursue them with their horses. The horses of Lapland are small of stature, but active and willing; they are used only in the winter season, in drawing sledges over the snow, and transporting wood, forage, and other necessaries; but in summer they are turned into the forests, where they form separate troops, strictly confined to their own quarters.

The Spanish horses are much commended: some make them second to the Arabians, and place them before the Barb. Those of the finest breeds are generally well trussed, and well knit horses, active and ready in their paces, of a quick apprehension and retentive memory, wonderfully docile and affectionate to man; full of spirit and courage, tempered with mildness and good nature, and generally very easy in all their paces; for the most part of a moderate size. Those which are bred in Upper Andalusia are deemed the most valuable. The Portugal horses, or rather mares, were famous of old for being very fleet and long-winded; but of late it is said they are much degenerated. The Italian horses were formerly more beautiful, and of greater fame, than the present race. Although this country is not now destitute of many generous and beautiful breeds, dispersed in studs, which are formed in different states or districts, the Neapolitan horses have always been renowned, and shine both under the saddle and in the traces. Great numbers are bred in Sicily, which has always been extolled for the superior excellence of its horses. Those of Sardinia and Corsica are small, but nimble, bold, and full of spirit. The Swiss horses partake of these qualities, and were formerly accounted serviceable in war. Germany is not destitute of generous and noble horses, useful for many purposes: but they are reckoned to be heavy and not good-winded. They have, however, finer breeds obtained from Turks and Barbs, which are kept as stallions, and also from Italians and Spaniards. In the chace and running they are inferior to the Hungarian and Transylvanian horses. The horses of Bohemia are not distinguished by any eminent qualities. The Hussars and Transylvanians are accustomed to slit the nostrils of their horses, under a notion of giving their breath a free passage, and improving their wind, as well as to render them incapable of neighing, which in war would be often inconvenient. The Croatian horses are nearly allied in qualities and character to the Hungarian and Bohemian: these, as well as the Poles, are remarkable for being, as the French term it, "Be-gut," or keeping the mark in their teeth as long as they live.

Holland furnishes a race of horses, which are principally serviceable in the coach: the best come from Friesland. The Flemish horses are inferior in value to the Dutch, having big heads with a channel towards the nostrils; their feet are immoderately large and flat, and their legs subject to watery humours and swellings in the heels. France abounds in horses of all kinds, but by no means excels. The best of those fit for the saddle come from Limoulin: they resemble the Barbs in many particulars, and like them are fittest for hunting, but they are not ripe for work till they are eight years old. There are also very good "Bidets" or ponies in Auvergne, Poitou, and Burgundy. Next to those of Limoulin, Normandy claims precedence, for its handsome, generous, and useful breed. Lower Normandy, and the district of

Cotentin, furnish a very good sort for the coach, which are nimbler, and have more elasticity in their motions than the Dutch horses. The French horses are apt to have their shoulders too loose and open, as those of the Barbs are too confined and narrow.

The finer and better sort of the more modern English horses are descended from Arabians and Barbs, and frequently resemble their fires in looks and appearance, but differ from them considerably in size and mould, being more furnished, stout, and lusty. In general they are strong, nimble, of good courage, capable of enduring much fatigue, and both in perseverance and speed surpass all horses in the world. However, it is objected to English horses, that they want grace or expression in their figure and carriage; that they are obdinate and fullen; that they have stiff shoulders, and want suppleness in their limbs, which render them unfit for the manege. England has at all times, even in its rudest state, been possessed of a breed of horses sufficient to answer every necessary purpose. But it is probable, that those now used in the service of war, as well as for draught, are an offspring of the German or Flemish breed, meliorated by our soil, and a judicious culture; as our race horses derive their origin from Arabia. The venerable Bede says, that the English began to use saddle horses about the year 631, when prelates and others rode on horse-back, who till that time were accustomed to walk. In the reign of Athelstan the English became so jealous of their horses, which were also held in high esteem by foreigners, that a law was made by that monarch to prohibit the exportation of them, unless they were designed for presents; and in the reign of this prince many foreign horses were introduced into this kingdom. The variety of breeds in this island was farther augmented by William the Conqueror, and particularly by Roger de Bellesme, earl of Shrewsbury, in his time, who introduced the Spanish stallions into his estate in Powis Land, from which that part of Wales was for many years celebrated for a swift and generous race of horses. (See on this subject Berenger's History and Art of Horsemanship, vol. i. passim; Buffon's Nat. Hist. by Smellie, vol. iii. p. 306, &c. Pennant's British Zoology, v. l. i. p. 1, &c.) The importation and breed of horses were much promoted by Edward II. and Edward III. Polydore Virgil informs us, that in the reign of Henry VII. the English were wont to keep large herds of horses in their pastures and common fields; and by 11 Hen. VII. cap. 13. it was prohibited to convey horses out of the realm without the king's licence, on pain of forfeiture. In the reign of the succeeding prince, a particular regard was paid to the raising of a breed of good and strong horses; and accordingly several laws were made, enjoining those who had parks, inclosures, &c. to keep at least two brood mares, of a certain size, &c. and prohibiting stoned horses from being put into forests or commons where mares were kept within certain counties, which were above the age of two years, but not fifteen hands high, on pain of forfeiture; and scabbed horses from being kept in such places, on pain of 10s. 27 Hen. VIII. cap. 6. 32 Hen. VIII. cap. 13.

By 1 Ed. VI. cap. 12., and 2 & 3 Ed. VI. cap. 33. horse-stealers are excluded from the benefit of clergy. By these prudent and judicious measures, the English breed of horses was not only improved in strength and size, but also greatly increased in number. Till the use of coaches (see COACH) was introduced in the reign of queen Elizabeth, saddle horses and carts were the only methods of conveyance for all sorts of people; and the queen rode behind her master of the horse, when she went in state

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to St. Paul's. By the 2 & 3 Ph. and M. cap. 7. and 31 Eliz. cap. 12. it is enacted, in order to prevent horses from being stolen or sold in private places, that owners of fairs and markets shall appoint toll-takers or book-keepers, who are to enter the names of buyers and sellers of horses, &c. And to alter the property, the horses must be rid or stand in the open fair one hour; and all the parties to the contract must be present with the horse. Sellers of horses are to procure vouchers of the sale; and the names of the buyer, seller, and voucher, price of the horse, the colour, and one special mark at least, are to be entered in the toll-taker's books, and a note of the same delivered to the buyer; and if any person shall sell a horse without being known to the book-keeper, or bring in a voucher; or if any one shall vouch, without knowing the feller, or the book-keeper shall make an entry, without knowing either; in each of these cases the sale is void, and a forfeiture is incurred of 5*l*. The owner may seize and take his horse again, or have an action of detinue, &c. A stolen horse, though sold according to the direction of the act, may be redeemed and taken by the owner within six months, repaying the buyer what he shall swear he gave for the same. Any person killing a horse in the night-time is guilty of felony, and liable to transportation for seven years; and maiming a horse incurs the penalty of treble damages. 22 & 23 Car. II. cap. 7.

Horses in hackney-coaches are to be 14 hands high. (9 Anne, cap. 23.) If hired horses are abused by immoderate riding, &c. there lies an action of trespass on the case. The act 26 Geo. III. c. 71. requires every person who keeps or uses any horse, or place for the purpose of slaughtering any horse, &c. or cattle which shall not be killed for butcher's meat, to take out a licence at the quarter sessions, and to cause his name and the words "Licensed for slaughtering horses pursuant to an act passed in the 26th year of his majesty king George III." to be painted or fixed over the door of such house or place; and an inspector shall be appointed by parish officers, whose duty is specified by the said act. Slaughtering horses, &c. without a licence and conformity to the requisitions of the said act, incurs the guilt and punishment of felony.

The duties imposed by 43 Geo. III. c. 161. and 45 Geo. III. c. 13. on all horses, mares, and geldings, kept by any person for riding, or drawing any carriage, chargeable with the duty on carriages, appear in the following schedule.

| Number thereof. | Amount of Duty for each Horse, Mare, or Gelding. | | |
|------------------------------------|--|----|----|
| | £. | s. | d. |
| For 1 such horse, mare, or gelding | 2 | 8 | 0 |
| 2 | 4 | 0 | 0 |
| 3 | 4 | 8 | 0 |
| 4 | 4 | 11 | 0 |
| 5 | 4 | 12 | 0 |
| 6 | 4 | 16 | 0 |
| 7 | 4 | 18 | 0 |
| 8 | 4 | 18 | 0 |
| 9 | 5 | 0 | 0 |
| 10 | 5 | 5 | 0 |
| 11 | 5 | 5 | 0 |
| 12 | 5 | 5 | 0 |
| 13 | 5 | 5 | 6 |
| 14 | 5 | 5 | 6 |
| 15 | 5 | 5 | 6 |
| 16 | 5 | 5 | 6 |
| 17 | 5 | 6 | 0 |
| 18 | 5 | 6 | 6 |
| 19 | 5 | 7 | 0 |
| 20 and upwards | 5 | 8 | 0 |

The said duties are payable annually, subject to the following exemptions:

1. Any person who shall keep any horse, mare, or gelding, which shall be used without fraud for the purpose of husbandry, or of drawing any carriages (except such as are liable to any duty by this act), or carrying burdens in the course of the trade or occupation of the person or persons to whom such horse, mare, or gelding shall belong, although such horse, mare, or gelding shall be used for riding on the occasions and in manner hereinafter-mentioned; that is to say, when returning from any place to which any load or burden shall have by such horse, mare, or gelding, been drawn or carried, or in going to any place from whence any load or burden shall be to be brought back by any such horse, mare, or gelding, or on account of such horse, mare, or gelding having been used for the purpose of riding to procure medical assistance, or for the purpose of riding to or from market, or to or from any place of public worship, or to or from any election of members to serve in parliament, or to or from any courts of justice, or to or from any meeting of the commissioners of taxes.

2. Any person occupying a farm as tenant at rack-rent, the rent of which shall be less than 70*l*. a year, and making a livelihood solely thereby; or any person occupying any estate on any other tenure than as tenant at rack-rent solely, or such estate, together with a farm at rack-rent, the whole value of which shall be less than equivalent to a farm at the rack-rent of 70*l*. a year (reckoning the value of every estate occupied by the owner thereof, or on any tenure other than rack-rent, as equivalent to double the amount of the like farm at rack-rent), and making a livelihood solely by such his own estate, or by such estate and farm jointly, and using occasionally for the purpose of riding, any horse, mare, or gelding, which shall be *bonâ fide* kept and usually employed for the purposes of husbandry.

3. Any person occupying a farm, and making a livelihood solely thereby, or any person carrying on a trade, and making a livelihood solely thereby; or making a livelihood by such occupation and trade jointly: or any ecclesiastical person, not possessed of an annual income of 100*l*. or upwards, whether arising from any ecclesiastical preferment or otherwise, for one horse, mare, or gelding, used only for the purpose of drawing any carriage with less than four wheels, liable to the duty hereby made payable on taxed carts.

The duties on horses let to hire are as follow: For every horse, mare, or gelding, let to hire for the purpose of riding, or of drawing any such carriage as aforesaid, for any period of time less than one year, in any manner so that the stamp-office duty, payable by law on horses let to hire, shall not be payable, the sum of 2*l*. 8*s*.

To be charged annually on the person or persons letting the same; provided, if a due return thereof shall not be made by the hirer or hirers, according to this act, the progressive duty, as set forth in the former schedule, shall be chargeable in respect of every such horse, mare, or gelding, on the person or persons hiring the same, and making such default as aforesaid.

The duties payable on race-horses are as follow: For every horse, mare, or gelding, *bonâ fide* kept for the purpose of racing or running for any plate, prize, or sum of money, or other thing, or kept in training for any of the said purposes, whether in the stables of the proprietor or proprietors, or of any other person or persons, the sum of 2*l*. 8*s*.

The said duty to be charged annually on the person or persons having the custody, charge, or management of such horses, mares, or geldings.

The duties charged on horses not otherwise charged, and

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on mules, are as follow: For every horse, mare, or gelding, not chargeable with any duty according to the preceding schedule, and for every mule, except in the cases hereinafter mentioned wherein other duties are made payable, the sum of 12s. 6d.

The duties on husbandry horses are as here stated: Any person occupying a farm at rack-rent, the rent of which shall be less than 20l. (in Wales 10l. sterling) a year, and making a livelihood (or in Wales principally) solely thereby, or occupying any estate on any other tenure at rack-rent solely, or such other estate, together with a farm at rack-rent, the value of which in the whole shall be less than equivalent to a farm at the rack-rent of 20l. (in Wales 10l. sterling) a year, (reckoning the value of every estate occupied by the owner thereof, or on any tenure other than at rack-rent, as equivalent to double the amount of the like farm at rack-rent) and making a livelihood solely by such his own estate, or by such estate and farm jointly or principally thereby, and likewise a profit by any trade or employment, and keeping not more than two horses, mares, geldings, or mules, *bonâ fide* for the purpose of such occupation, shall be charged for each of such two horses, mares, geldings, or mules, the sum of 2s. 6d.

The exemptions to the several duties above specified are,

1. Any horse, mare, or gelding, belonging to his majesty, or any of the royal family.

2. Any post-master, inn-keeper, or other person duly licensed by the commissioners of stamps, in respect of any horse, mare, or gelding, let to hire by him, in any manner where the stamp-office duty payable on horses let to hire shall be duly satisfied and paid on each letting, and which shall not, on any occasion, be used for any other purpose.

3. Any person duly licensed to keep any public stage coach or carriage for conveying passengers for hire from different places in Great Britain, in any respect of any horse, mare, or gelding, which shall be actually and solely employed for that purpose.

4. Any person licensed by the commissioners for hackney coaches within London and Westminster, and the suburbs thereof, to keep any hackney coaches, for any horses, mares, or geldings, kept for the purpose of drawing such coach, in respect of the duties before mentioned, and for two horses, mares, or geldings, and no more, kept for the purpose of drawing each coach so licensed in respect to the duties in the former schedule.

5. Any dealer in horses, assessed to the duties hereby made payable on such dealers, for any horse, mare, or gelding belonging to such dealer, and kept *bonâ fide* for sale, and not kept or used for any other purpose, or in any other manner.

6. Any person who, on account of poverty, shall be discharged from the assessment made in respect of his dwelling house, in pursuance of the regulations of this act, for any horse, mare, or gelding, provided such person shall not keep more than one such horse, mare, or gelding, and the same shall not be let to hire.

7. Any rector, vicar, or curate, actually doing duty in the church or chapel of which he is incumbent, who shall not be possessed of an income of 60l. per annum or upwards, whether arising from ecclesiastical preferment or otherwise; and who shall not keep more than one horse, mare, or gelding, for the purpose of riding, which otherwise would be chargeable with duty according to this act, except such person who shall occasionally perform the duty appertaining to any rector, vicar, or curate, without being the regular officiating minister of the parish or place in which such duty shall be performed.

8. Every person inrolled, or to be inrolled, and serving in

any corps of yeomanry or volunteers, which shall hereafter be continued or formed, with the approbation of his majesty, under officers commissioned by his majesty or lieutenants of counties, or others who may be specially authorized by his majesty for that purpose, who shall have attended the exercise of such corps, five days of muster and exercise at the least in the course of the preceding year, and who shall be returned in the muster rolls of the said corps, as required by law, and certified to have so attended, unless prevented by actual sickness (such sickness to be certified by some medical practitioner to the commanding officer of such corps), and who shall be returned in the said muster-roll of such corps, as having used any horse, mare, or gelding, for service during such days of muster and exercise, shall be exempted from the payment of the duties set forth in the preceding schedules in respect of such one horse, mare, or gelding; such exemption to be returned and claimed in the manner in which exemptions are directed to be returned and claimed by this act: but every claim of such last mentioned exemption shall be proved by the certificate under the hand of the officer commanding the corps in which such person shall be inrolled, which certificate shall, between the 5th April and the 5th May in every year, be delivered to the assessors of the parish where he shall reside; and every person claiming to be so exempted, shall be chargeable thereto, unless such certificate shall have been delivered pursuant to this act; which certificates made up, returned, and certified, shall be deemed sufficient and valid for the purposes aforesaid; but if from any variation of circumstances, or other reason, the said form cannot be strictly adhered to, instruments of a similar import may nevertheless be received in proof, at the discretion of the commissioners executing this act for the district.

9. Any non-commissioned officer or private of any of the regiments of cavalry, or in the artillery, for any horse used in his majesty's service.

Horse-dealers are chargeable as below stated:

Every person who shall use or exercise the trade and business of a horse-dealer within the cities of London and Westminster, and the liberties of the same respectively, the parishes of St. Mary-le-bone and St. Pancras, in the county of Middlesex, the weekly bills of mortality, or the borough of Southwark, in the county of Surry, the annual duty of 20l.

Every person who shall use or exercise the trade and business of a horse-dealer in any other part of England, or in Wales, or the town of Berwick-upon-Tweed, the annual duty of 10l.

For the duties of post-horses, see the article Post.

A horse is usually divided into three principal parts, *viz.* the *fore-hand*, the *body* or *carcase*, and the *hind-hand*. The *fore-hand* includes the head, neck, withers, breast, and fore-legs. The *body* is composed of the back, kidneys, ribs, belly and flanks. The *hind-hand* comprehends the rump, haunches, tail, buttocks, stifle, thighs, hocks, and the other parts of the hind legs. By another mode of division, the horse is distinguished into four parts, *viz.* the head, the body, and the fore and hind trains. The *body* is composed of the back, the kidneys, the belly, the ribs, and the flanks. The *fore-train* consists of the neck, the shoulders, the breast, and the fore-legs; and the *hind-train* of the rump, the tail, the haunches, and the hind legs. These several parts may be more distinctly understood by means of the subjoined detail, and a reference to the *Plate of Horses*. A, the two bones corresponding to the *temples* of a man, and called by the same name: B, the *eye-pits*, or two cavities between the eye and ear, above the eye brows: C, the *vivæ*; the parotid glands, situated between the ear, and the locking

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of the under jaw: D, the *face* or *chanfrin*; the fore part of the head from the eyes to the nostrils: E, the *rim of the nostrils*; the cartilage which forms the circular aperture of the nostrils, and terminates them above and below: F, *tip of the nose*; the partition which divides the nostrils, terminating at the upper lip: G to H, the bones of the lower jaw: H, the *chin*: I, the beard.

Gatherers. The two fore teeth.

Middle teeth. Those adjoining to the gatherers.

Corner teeth. The last on each side.

Tusks. The two canine teeth on each side, and in each jaw.

Bars. The spaces between the cutting teeth and grinders, filled with ridges, which run across the palate.

K, the *neck*, which is bounded above by the mane, and below by the throat, extending from the shoulders to the head: L, the *tuft* or *toupet*; that part of the mane which lies between the two ears, and hangs down on the front: M, the *withers*; the place where the two shoulders approach each other between the neck and back: N, the *shoulders*, extending from the withers M, to the top of the *fore hand*, or fore-leg O: P, the *chest* or breast: Q, the *back*, reaching from the withers M, to the reins S: R, the *navel*; the part between the back and reins; a very absurd term, as the *navel* is in the lower part of the belly: S, the *reins*; this term is often used, though improperly, to express the whole spine of the horse: T, the *sides*, which are formed and limited by the ribs: V, the *coffer*; the hollow formed by the contour of the ribs. The name *belly* is given to the part extending from V to the flank: X, the *flanks*; the extremity of the belly, at the termination of the ribs, below the kidneys, and reaching to the haunch-bones: Y, the *haunch*, formed, as in man, by the haunch-bone: Z, the *crupper*, which is round, and reaches from the kidneys to the tail. The *tail* is distinguished by two parts, the *hair* and the *bone*: a, the *buttocks*, are situated below the crupper and the origin of the tail, and extend to the place where the hind-leg joins the body: b, the *shoulder-blade*: c, the *humerus*; both of these are included by horsemen under the name of *scapula*: d, the *elbow*: e, the *arm*: f, the *knee*, or joint situated below the arm, a term improperly applied to a horse, as it corresponds to the wrist in man: g, the *shank* or *canon*; the second part of the fore-leg. It begins at the articulation of the knee, terminates at the fetlock joint i, and answers to the metacarpus in man: h, the *tendon*, commonly called the back-sinew: i, the *fetlock* joint: k, the *tuft* of hair which surrounds a kind of soft horn situated behind the shank: l, the *pasterns*; the part of the leg which extends from the fetlock-joint to the hoof: m, the *coronet*; the place where the hoof joins the leg, and is decorated with long hair falling down all around the hoof: n, the *hoof* represents the nail in man; the fore-part of it, u, is called the *toe*, and the sides, o, the *quarters*. The hind-part of the hoof is a little raised, and divided into two parts, both included under the name *heel*; they extend to the middle of the under part of the foot, and uniting again under the sole, or bottom of the foot, form the *frog*: p, the *stifle*, is properly the articulation of the knee, and contains the knee-pan: q, the *thigh*; it extends from the stifle and extremity of the buttocks to the ham r, and answers to the leg in man. Accordingly, the horse's thigh has a fleshy part s, resembling the calf of a human leg: t, the *hock* or *ham*, is the joint at the extremity of the thigh, and bends forwards. This articulation corresponds with the *tarsus* in man. The hinder-part of the joint, called the *hock*, is properly the *heel*. What is commonly called the *great sinew*, which arises from the point of the hock, and

terminates in the foot, is a tendon, answering to the *tendo Achillis* inserted into the human heel: u, the *shank*: x, the *pastern joint*: y, the *pasterns*: z, the *foot*, as in the fore-leg. (Buffon's Nat. Hist. by Smellie, vol. iii.) Of most of these parts a further account will be found under the respective articles.

The masters of this art lay it down, that a horse, to be good and well-made, must have three parts like those of a woman; *viz.* the breast, which is to be broad, the hips round, and the mane long; three of a lion, *viz.* countenance, intrepidity, and fire; three of a bullock, *viz.* the eye, nostril, and joint; three of a sheep, *viz.* the nose, gentleness, and patience; three of a mule, strength, constancy, and foot; three of a deer, head, leg, and hair short; three of a wolf, throat, neck, and hearing; three of a fox, ear, tail, and trot; three of a serpent, memory, fight, and turning; three of a hare or cat, running, walking, and suppleness.

Of all quadrupeds, says M. Buffon, the horse possesses, along with grandeur of stature, the greatest elegance and proportion of parts. By comparing him with the animals immediately above or below him, we find that the ass is ill made; that the head of the lion is too large; that the limbs of the ox are too slender and too short, in proportion to the size of his body; that the camel is deformed; and that the grosser animals, as the rhinoceros and elephant, may be considered as rude and shapeless masses. The great difference between the head of man and that of the quadrupeds, consists in the length of their jaws, which is the most ignoble of all characters. But, though the jaws of the horse be very long, he has not, like the ass, an air of imbecility, nor, like the ox, of stupidity. The regularity and proportion of the parts of his head give him a light and sprightly aspect, which is well supported by the beauty of his chest. He elevates his head, as if anxious to exalt himself above the condition of quadrupeds. In this noble attitude, he regards man face to face. His eyes are open and lively, his ears handsome and of a proper height, being neither too long, like those of the ass, nor too short, like those of the bull. His mane adorns his neck, and gives him the appearance of strength and of courage. His long bushy tail covers and terminates with advantage the extremity of his body. His tail, very different from the short tails of the deer, elephant, &c. and from the naked tails of the ass, camel, rhinoceros, &c. is formed of long thick hairs which seem to arise from his crupper, because the trunk from which they proceed is very short. He cannot, like the lion, elevate his tail, but, though pendulous, it becomes him better; and, as he can move it from side to side, it serves him to drive off the flies which incommode him; for, though his skin be very firm, and well garnished with close hair, it is extremely sensible.

The attitude of the head and neck contributes more than all the other parts of his body, to give him a graceful aspect. The superior part of the neck from which the mane issues, should first rise in a straight line from the withers, and then, as it approaches the head, form a curve nearly similar to that of a swan's neck. The inferior part of the neck should have no curvature, but rise in a straight line from the poutrel, or breast, to the under jaw, with a small inclination forward. If it rose in a perpendicular direction, its symmetry and gracefulness would be diminished. The superior part of the neck should be thin, with little flesh near the mane, which ought to be garnished with long delicate hair. A fine neck should be long and elevated, but proportioned to the general size of the animal. When too long, the horse commonly throws back his head; and, when too short and

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fleshy, the head is heavy to the hand. The most advantageous position of the head is, when the front is perpendicular to the horizon.

The head of a horse should be thin and meagre, and not too long. The ears should be small, erect, but not too stiff, narrow, and placed on the upper part of the head, at a proper distance from each other. The front should be narrow and a little convex, the eye-pits, or hollows between the eyes and ears, well filled, and the eye-lids thin; the eyes should be pretty large and prominent, clear, lively, and full of fire; the pupil should be rather large, the under jaw a little thick, but not fleshy, the nose somewhat arched, the nostrils open and deep, and divided by a thin septum or partition. The mouth should be delicate and moderately split, lips thin, withers sharp and elevated, the shoulders flat, and not confined; the back equal, a little arched lengthwise, and raised on each side of the back-bone, which ought to have the appearance of being sunk; the flanks should be short and full, the crupper round and plump, the haunches well furnished with muscular flesh, the dock or fleshy part of the tail firm and thick, the thighs large and fleshy, the hock round before, broad on the sides, and tendinous behind; the shank thin before, and broad on the sides; the tendon (or tendo Achillis) prominent, strong, and well detached from the leg-bone, and the fetlock somewhat prominent, and garnished with a small tuft of long hair behind; the pasterns should be of a middling length, and pretty large; the coronet a little elevated, the hoof black, solid, and shining, the instep high, the quarters round, the heels broad, and a little prominent, the frog thin and small, and the sole thick and concave. We should here add, that few horses possess all these perfections.

The three natural and ordinary movements of horses are walking, trotting, and galloping. In walking, the horse raises his feet very little above the surface; in trotting, he elevates them a little more; and in galloping, still higher. The walk ought to be smart, light, and sure; the trot should be firm, quick, and equally supported; and the fore-legs pushed with rapidity by the hind ones. The trotting-horse should carry his head pretty high, and keep his body straight; for if the haunches rise and fall alternately, at every movement, and if the crupper rocks, the animal is too weak for this motion. Besides the three movements of walking, trotting, and galloping, some horses have another natural motion, which is known by the name of "ambling" or "pacing;" this motion, though less quick than the hard trot or gallop, appears, at first sight, to be extremely fatiguing to the animal. The trot is, perhaps, the most natural motion of a horse; but the pace, and even the gallop, are most easy to the rider.

Horses are distinguished into divers kinds; and are differently denominated, with regard to their strain or country. As the Neapolitan, known by his hawk nose; the Spanish genet, by his small limbs; the Barb, by his fine head and deep hoof; the Dutch, by the roughness of his legs; the English, by a strong knitting together, &c. the Flandrin, &c.

Horses are also distinguished, with regard to the uses or offices they are reserved for; as the coach-horse, war-horse, hunting-horse, running-horse, pack-horse, &c.

Horses are also distinguished with regard to their colours; as a bay, which admits of divers shades or calts; viz. a black-bay, brown-bay, dapple-bay; all which have constantly black manes and tails. *Dun* and *mouse-dun*, having frequently a black list along the back, which denominates them *flca-backed*. *Flea-bitten*, which is white spotted with red.

Grey, dapple-grey, silver-grey, sad or powdered grey, black-grey, branded-grey, sandy-grey, and iron-grey. *Griffel*, or *rount*, a light flesh-colour, intermixed with white. *Peach-colour*, or *bllossom-colour*. *Pyebald*, which consists of two colours, one of them white. *Roan*, a bay, black, or sorrel, intermixed with white hairs. *Rubican*, black or sorrel, with a few white hairs scattered about his body. *Sorrel*, common sorrel, red or cow-coloured sorrel; bright, or light-coloured sorrel; burnt-sorrel, all chiefly distinguished by the colour of their mane. *Starling-colour*; resembling a brownish or blackish-grey, only more freckled, or intermixed with white. *Tyger-colour*, much the same with the branded-grey, only the spots smaller. *Wolf-colour*, *deer-colour*, *black*, *white*, &c.

These colours are generally considered as symbolical of the nature, qualities, &c. of the beasts, and accordingly their value is much influenced hereby. The dapple-grey is prized for beauty; the brown-bay for service; the black, with silver hair, for courage; the roan for countenance; the sorrel, black without white, and iron-grey, are reputed hot and fiery; the bright-grey, flea-bitten, and black with white spots, are sanguine; the white, dun, and pye-bald phlegmatic and heavy; the mouse-dun, red-bay, and blue-grey are dull; the peach-colour rarely prove obedient to the spur; the sorrel seldom fail of being good, especially if their legs, tails, and manes be black; and the same may be said of the flea-bitten, at least those so marked in the fore-parts, or over the whole body; or, when only behind, it is an ill sign.

Indeed, it is hard to lay down any universal rules in this case. The white, which promise the least, often prove good, when black about the eyes and nostrils; and there are excellent iron-greys, though that is not reputed a good colour. The white colour was anciently the most admired, and considered as a mark of pre-eminence and sovereignty. Herodotus reports, that the Cilicians paid an annual tribute of three hundred and sixty white horses to Darius, king of Persia; and in Xerxes' march against Greece, the chariot of Jupiter was drawn by eight white Nysæan horses, the colour being appropriated religiously to the deity. We read likewise, in the book of Kings, that the kings of Judah were used to dedicate horses to the sun. Tacitus says, the ancient Germans had certain horses, which were white, that were consecrated to their gods. We learn also from Livy and Diodorus Siculus, that white horses were held in high estimation in Sicily and at Rome. This was also the case at Naples; and also anciently in our own country. Nevertheless, if we may believe Virgil and others, who pretended to prognosticate the innate properties of horses by the colour of their skins; and other marks, the white should be always rejected, as having few qualities which can render them pleasing or serviceable. Virgil evidently means, not white milk-horses, but those of a faint pale colour, somewhat bordering upon the cream-colour, or whitish dun; for he elsewhere commends the whiteness of the coats of Turnus's horses. Claudian, also Plautus, Horace, Statius, and Palladius join in celebrating it; and we may reasonably suppose that they spoke according to the fancy and opinion of the times in which they wrote.

The common marks of a dull, stupid horse, are white spots round the eye, and on the tip of the nose, upon any general colour whatever. Though the vulgar take these spots for signs of stupidity, yet it is certain they are marks of the goodness of a horse; and such horses as have them are very sensible and quick upon the spur. The French call these spots *marques de ladre*.

Our dealers in horses use the term mettled horse to express

prefers a creature of that species which has a great deal of vigour and heart, as they call it. Otherwise, there is a great difference between a mettled horse, a horse of vigour, and a fiery horse; but as this is not sufficiently attended to by gentlemen in their purchases of this animal, some general rules for the distinguishing real vigour in a horse, may be acceptable in a work of this general kind.

When a horse is standing still, the rider who has a mind to try whether he has vigour in him, should keep him fast with the bridle-hand, and apply the spurs to the hair of his sides; this is called by horsemen pinching. If the horse is impatient under this, gathering himself up, and endeavouring to go forwards, and champs upon the bit, without thrusting out his nose, it is a sign of vigour and right mettle in him. Some caution is to be used, however, in judging by this, to distinguish between a horse that has vigour really in him, and one that has only a fine skin, and is rather ticklish than mettled. This is the case with a great many horses, and is found by their being very sensible of the touch of the spur, and shewing the appearance of a great deal of mettle and vigour when touched, but immediately losing the apprehension of it. These are of a dull disposition, but only have a tender skin.

Pliny tells us, that if a horse, in drinking, plunged his nose deep into the water, it was reckoned a sign of spirit and courage; and this notion prevails even at present in this country.

The mettled horse is to be highly valued, but the fiery one is good for nothing; a horse that is truly vigorous should be calm and cool; he should in general move on patiently, and only shew his mettle when it is required of him. The surest method is to choose such horses as are extremely apprehensive of strokes, and are afraid at the least appearance of their coming. These, at the only closing of the legs and thighs, seem to be seized with fear, and alarmed, but without fretting or fierceness. A horse that walks deliberately and securely, and that without requiring the whip too often, will go on briskly and without fretting, will go from the walk to the gallop, and as easily from the gallop to the walk again, and continually champs upon the bit, and trots with glibness, upon the shoulder easily, and snorting a little through his nostrils; this is generally a creature of true metal and vigour, though it does not rise to such a fierceness as is troublesome or dangerous. If to these good qualities a horse be well upon his haunches, and have a light and easy stop, his head well placed and firm, and the feeling of his bit equal and just, the gentleman who loves riding will seldom need to complain of the price. All the good qualities of a horse should, however, never recommend him, unless he has a good mouth, and a sensible obedience to the spur.

HORSES, *For the Age, Height, Teeth, &c. of,* see AGE, HEIGHT, &c.

HORSE, in *Agriculture*, the general name of a well known animal employed in various sorts of team labour. There are two principal breeds of horses in this country; the *race* or *blood* kind, and the *cart*, *plough*, or *team* sort. It is the latter description that is chiefly useful in the business of cultivating the soil. The most beneficial varieties of these kinds, in this view, would seem to be the improved black cart-horse; the Suffolk punch-horse, the Cleveland bay-horse, and the Clydesdale horse. The first, or black cart-horse, is the common sort, met with in particular parts of the counties of Lincoln and York, becoming pretty general in those of Leicesters, Stafford, Derby, and Warwick; being, in point of size, larger than any others in the kingdom; but by nature inactive and slow in their movements; besides being clumsy, and not unfrequently badly proportioned.

They are in general more adapted to heavy draughts upon paved roads or streets, than for the purposes of ploughing and harrowing the ground, or any other description of farm-labour. The largest horses of this kind are mostly made use of in the drawing of drays, and other sorts of heavy work, in large towns. The size below this is that which is commonly employed in the business of the field, as well as occasionally in carriages. The smallest description of them are usually bought up for being trained to military uses. It has been justly noticed that the large black dray-horses, in point of size and fatness, do not admit of any equal; while in relation to hardiness, vivacity, and nervous energy, they rank probably amongst the lowest of their kind.

The Suffolk punch, or second variety of team-horse, when of the genuine description, is but a short, plain-looking horse, though very compact, and more active and hardy than any of the others that are met with in the southern parts of the kingdom. It is a sort that has, however, lately been much improved. When compared with the above breed, and that of the Cleveland, these horses are of but small sizes, rarely exceeding fifteen or sixteen and a half hands in height; they are, however, so active, that the cultivators in that district, as well as in Norfolk, very generally plough two acres a day in the busy seasons with a pair of these horses, without any driver. This sort of horse is very commonly employed in the business of farming in the southern districts of the island. They require to be well kept in regard to food, but amply repay the expence under proper management, by the value of their labour.

The Cleveland bay-horse, or third variety, is generally clean and well made in most of the parts; being very strong and active, answering perfectly both for the team, coach, and saddle. There are few horses capable of greater, or longer continued exertion in any of these intentions, than these. It is usual for great numbers of these horses to be sold in the various fairs and markets of the district in which they are met with, such as are the strongest and most perfectly formed for the purpose of carriage-horses, those which are lighter in the bone, for the purpose of riding, and the others for their use in the different operations of husbandry, &c.

The fourth, or Clydesdale horse, is a strong, active, steady animal, generally from fifteen to sixteen hands and a half in height; and probably, for the purposes of the cart and the plough, inferior to few in this country. It is supposed that we are indebted to the accidental circumstance of some of the dukes of Hamilton for this variety, who brought from Flanders six coach stallions, some time about the close of the seventeenth century; which, by being crossed with the best mares of the kind found in the Lanark district, this sort of horse was produced. The farmers in the south and south-eastern parts of Scotland, are now even principally supplied with their team horses from this and the neighbouring districts. Some are sold for their use as coach and saddle-horses, and taken into the southern parts of the kingdom, as well as for team-labour.

It is stated by a late writer, that this horse "is lighter in the body than the Suffolk punch, and more elegantly formed in all respects. His limbs are clean and finewy, his neck longer, his head of a finer form, and his eye more sprightly and animated than in either of the two former kinds. His tread is firm though tending towards the nimble; and he is capable of exerting a wonderful degree of muscular strength for a short push without being hurt by it, which makes him particularly valuable for that hilly country, where there is a necessity for calling forth such exertions on innumerable oc-

casions. He is hardy, can live upon any food, and is, perhaps, the thriftiest horse for the cart or the plough that is to be found in the island, perhaps on the globe itself. For these purposes he is peculiarly adapted by the evenness of his temper and the steadiness of his movements. For the plough he is, perhaps, every thing that could be wished; being, in point of size, neither so large nor so unwieldy as to render him a burden to the soil; two of these horses in the softest soil, under good management, being perfectly able to draw a full furrow with ease; and for horse-hoeing, or ploughing a light soil in good order, one of the lightest sort performs the work with alacrity and ease. What a benefit, says the writer, would result to the nation, were a set of judicious experiments to be conducted for a sufficient length of time, for the purpose of ascertaining the comparative powers and expence of keep of these last three different varieties of horses, so that any one might know who chose it, with certainty, the profit or the loss that would result to him from employing the one or the other, for any particular purpose that he had in view."

Besides these different varieties of farm-horses, there are several horses of a still smaller description, usually known under the denominations of Galloways, poneys, &c. which may be occasionally found useful in the business of husbandry, though mostly too small in size for the forming of plough teams.

Whatever the variety of the breed of a horse may be, in order to be well formed, it should have the following shapes of the different parts: the head as small as the proportion of the animal will admit; the nostrils expanded, with a fine muzzle; the eyes chearful and prominent; the ears small, upright, and placed near together; the neck, rising out from between the shoulders, with an easy tapering curve, should join gracefully to the head; the shoulders, being well thrown back, should also fall into the neck, at what is termed the points, without being perceived, which probably facilitates the going much more than the narrow shoulder; the arm or fore-thigh should be muscular, tapering from the shoulder so as to meet a fine straight finewy and bony leg; the hoof circular and wide at the heel; the chest deep and full at the girth; the loin or fillets broad and straight, and the body round; the hips or hooks by no means wide, but the quarters long, and the tail set on so as to be nearly in the same right line as the back; the thighs strong and muscular; the legs clean and fine-boned; the bones of them not round but flat, or what is frequently termed lathy. But for the team of the farmer, the principal points to be attended to should be those of not having the neck either too long or too thick; the legs rather short and flat than round and clumsy; the fore-feet even, but not too distant; the chest wide; the shoulders strong but not high; good length of waist supported by a wide loin; the quarters full and somewhat raised; the legs strong, firm, and muscular, and the size from 15 to 16 hands in height.

It has been noticed, that horses being somewhat forelow affords them an advantage in the draught, and that a tolerable length of waist gives them speed in the walk, which is not unfrequently a point of importance in farm work. Some suppose that horses for the purpose of farming should be similar to those used in riding, only of larger sizes; and in place of being capable of walking merely two or three miles in the hour, to be able to travel at the rate of four or five; as by that means the farmer would be enabled to plough more land in a given time; and to use more dispatch in the work of the cart or waggon when necessary. The utility of a strong active horse at harvest time is well known to every one; and in the business of conveying manure to

the field and market work, such properties are not less valuable.

By taking care in breeding to have the heads of horses light, handsome, and well set on, and by proper attention in crossing stallions and mares, coach and cavalry horses of high value may be produced, which, if for sale by the farmer, would, without doubt, pay him well for his trouble and expence. The breeding of good horses is not more expensive than that of bad ones, except in the attention which is necessary, though the difference in the price at the market is very great. And it is known to every one, that cart-colts become ready for sale at an early period. There can be no doubt but that coach-horses may be bred from mares of the Suffolk kind when covered by horses of the strong race or hunter sorts, or the contrary. And should it be the wish to rear horses for sale as hackneys, it will probably be the best method to select both the mare and horse of the blood sort, or at least with each some blood, which is perhaps better than making use of full blood horses. These should be bred with well set on light heads, even and good feet, close before and wide behind; plenty of bone below the knee, and high deep and slanting shoulders; deep in the girth, handsomely rounded in the barrel, as well as on the hip-bones; straight in the back, but the waist long enough to give speed, with the loins and fillets proportionately strong; the tail even with the back-bone. But instead of breeding, such farmers as intend to derive a profit from this description of stock, may constantly find both colts and fillies for his purpose in the different fairs, markets, and other places.

Mares, for the purpose of breeding, should always be well shaped in their different parts; have a gentle and easy disposition; be possessed of a large carcass in proportion to their heights; being pretty full in their bellies, and appearing likely to form good nurses and have plenty of milk. Those intended for supplying the teams of the farmer with draught horses should, according to some, be large limbed, close jointed, short necked, wide chested, home ribbed with a capacious body; the eyes should be perfectly clear, full, and pellucid, and the nostrils large and open; the disposition ought to be gentle and tractable, the constitution healthy and vigorous, free from blemishes of any kind.

The horse, in this case, should be bold and spirited, well made, and of a kindly disposition; the constitution strong and healthy, the temper good, and wholly free from any sort of vice and contamination; as upon the good properties and healthy condition of the parents, in a great measure depend the future utility and advantage of their offspring. Since general experience has fully shewn that in what relates to form and other good qualities in the progeny, more depends on the mare than the horse; the usual practice of regarding the horse more than the mare is highly improper, as being disadvantageous. The form and other properties of the horse should always have as much similarity as possible to those of the mare, as in this way their joint properties may be more reasonably expected in the young which they produce, than by violent unnatural crossing. Where a half-bred mare, for instance, is put to a large heavy awkward cart horse, or the contrary, the offspring must naturally turn out an indifferently mungrel breed that has rarely the size and strength of the one, or the spirit, activity, and fine bone of the other. See BREEDING, LIVE-STOCK, and TEAM.

In breeding the dray-horse, less movement or activity is requisite, but more power; and the same principles are applicable in some measure to those for the waggon, though in a far inferior degree. For these uses it is important that they be very broad-breasted, and thick in the shoulders, without

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without their lying so much backward, or rising so much in the fore-hand, as is the case in saddle-horses.

Mares in general are not suffered to take the horse in this country until they are from two and a half to three or four years of age, but continue to breed till they reach a good age, as 12 years and upwards.

The horse may be permitted to cover from the age of three or four years until he becomes unfit for the purpose by age. Stallions should constantly be kept high with the best sorts of food, and be well dressed and taken care of, as without this attention they never answer well.

The season at which the mare commonly takes the horse is mostly from about the beginning of April until the end of June, the last month being generally supposed the best period. An early foal is, however, constantly to be preferred to such as are late.

The mare goes with foal usually about eleven months, but sometimes exceeds it a few days. It is commonly the main object with farmers, where possible, to have their mares covered at such times, as that there may be plenty of grafs at the period of foaling, as well as warm favourable weather, as both are highly beneficial to the new dropped foal.

Mares are in some places wholly taken from work some weeks before the time of foaling; but this is by no means the general practice of the country. In the eastern and midland counties that adjoin them, in which the breeding and rearing of horses are more perfectly understood than in most other parts of the kingdom, it is not unfrequently the custom to work them to the very period of foaling. But there are certainly much care and attention necessary in working mares that are so heavy with foal; as an over heat, too hard labour, a fright, or sudden jerk, or any other similar cause, may endanger not only the loss of the foal, but also that of the mother.

It is the custom in most of the improved districts of the kingdom where the breeding and rearing of horses are practised, after foaling to turn the mare and her foal out into a pasture field, where they remain for two or three weeks before the mare is again put to work either in the plough or cart, the foal during the time being suffered to suckle at pleasure. After having had this rest, she is again suffered to work in the usual way, the foal being confined in some proper place during the time. In the intention of avoiding the evils arising to the foals from bad or over-heated milk, some of the Yorkshire breeders are extremely careful not to suffer the mares to go near their foals, after their return from work, until their udders have been well bathed with cold water, and the greatest part of the milk drawn from them. There is likewise another practice which has, perhaps, a superiority to the above, in the same district as well as some others; which is, as soon as the foal has acquired strength sufficient, and is fully capable of following its mother, to permit it to accompany her to the field during the time of working, and to suckle there as there may be occasion. In this way the foal has full exercise, without incurring any danger from the over-heated milk, it being drawn off so frequently. These are the common modes in use while the foal is suffered to suck, which is mostly about six months, as from the time of foaling to Michaelmas, the period at which they are usually weaned.

In the business of weaning foals it is a good practice to confine them at a distance from their mothers in some small stable or shed for the purpose, where there is a rack and manger, in which they may be fed with clean shaken hay, and well sifted oats, bruised in a mill. Under this treatment they speedily forget their mothers, and become quite tractable and reconciled to the keeper. They should be per-

mitted to exercise and enjoy themselves in a pasture field or paddock, contiguous to the place of confinement, during the funny parts of the middle of the day, it being dangerous to keep them out during the night, on account of their tenderness.

When the foals have been weaned, the usual custom is to put them directly into some good fresh pasture, where they may continue so long as the weather proves mild and temperate, when, on the approach of winter, they are to be fed with a sufficient quantity of hay, placed in the shed or hovel in the field for the purpose, into which they can freely enter at pleasure. The year following, in the summer, they are removed into other pastures, often the most inferior on the farm, where they continue until the commencement of the ensuing winter; when they are either permitted to range in the common pasture fields, or brought home to the yards. It is advised by some to have the foals fed during the winter season with a little corn twice in the course of the day; or carrots, with hay, oat-straw, &c, letting them have a well littered shed or yard that is perfectly sheltered. Such colts as are fed at home with green meat cut fresh for them daily during the summer season, should have a range daily upon a field or adjoining common, for the purpose of exercise. And the yearling colts should be kept quite separate from the mares with their foals.

In the management of young horses, those of the cart colt kind are often begun with at about two years of age; and one great object in this business is first to teach them docility, by frequent leading in the halter, as well as to back and go in the shafts or traces. But this is better delayed in saddle colts till the third year, or the autumn preceding it; and they should now be carefully attended to, and have a good mouth given them, though some think but little of it. They should likewise be taught to canter handsomely; and when they are of proper size, they may be gently wrought in the plough or other sort of team labour. Their going well, and being quiet in harness, render them of more value as well as utility in the opinion of many.

The field work such horses are at first inured to, is generally that of harrowing, to which they should seldom be kept more than one-half of the day, when they commence it, and afterwards only very gently, for the remainder of the season.

It is the usual practice of the northern horse-breeding farmers to dispose of their young stock, at two or three years old, to those in the more southern parts of the kingdom, who, after keeping and working them about the same length of time, dispose of them to the dealers in the metropolis and other large places. This custom is very common, and extremely convenient to all the different parties engaged in it; as the breeder meets a ready and constant market for his young horses at the times when he wants to be quit of them, and is thereby enabled to carry on the breeding system without the danger of being overstocked. And those who are the first purchasers are able to dispose of them to the dealers in the large cities and other places in the south, as proper opportunities may be afforded, as they are fully aware that a supply of young horses will reach them in proper time to answer their intentions. Besides, the dealers in the metropolis can, without the expence and trouble of travelling into the more northern districts, where the largest proportion of young horses is bred and reared, supply themselves with such as are proper for their uses in the different counties in their own vicinity. In the carrying on of this business, besides the principals, there are generally two agents or more who derive their living from it, the jobber or middle-man, who procures the horses from the breeders and
sells

HORSE.

sells them to the farmers in the south; and the dealer in the vicinity of the metropolis, who makes the purchases from the farmers in the south, at his own risk, standing the chance of sale to the buyers in the above place; or who provides them on commission for such dealers. The young horses are mostly sold with their full tails to the dealers; who afterwards make them up by art, so as to suit their different views. They usually undergo the processes of docking and nicking, and often various other operations performed upon them. After being kept, or what is often termed made up, by having bran washes, or those of coarse ground oats, and boiled grain, given them for two or three months, they are disposed of by the dealers to their customers in the metropolis.

The usual periods of cutting or gelding colts, is either while they are quite young, or when they have attained the age of two years. This is particularly the case when it is the intention to keep them, without making use of them in labour until the ensuing spring. The most proper season for performing this operation is in the early spring months, before the weather begins to get too warm. See CASTRATING and GELDING.

For farming purposes it becomes the business of the cultivator to suit the horses in their strength and size, to the nature of the work that is to be done, as where they are disproportioned in either of these respects, or in their number, the profits of the farmer must be lessened. And where the stable economy is not so correct or proper as it ought to be, and the horses of course become diseased, or where they are wrought too hard, or not kept sufficiently to their labour, as well as where they are fed without regularity; the same thing must be the consequence. In the best arable districts in the northern parts of the kingdom, the methods of working and treating the labouring horses are, at the time of the feeding, to increase the length of the time of working in the day, and to have recourse to such food as is of a better quality, than that which is usually allowed during the winter season. They are at this busy period commonly foddered with hay or pea-straw, with each half a peck at least of dry clean oats, or these in mixture with peas or beans, as soon as they return from the field in the morning and evening; and a certain portion of the dressings of the corn in mixture with common or cut chaff, either well soaked in cold water, or boiled, is also given every forenoon and afternoon before the work is begun again. They are consequently, during the laborious part of this interesting season, fed regularly four times in the day with corn. But in these northern parts of the island, instead of executing the whole of the diurnal labour constantly, in what is termed, in the south, one journey; the farm horses, from the middle of March to the end of September, make two journeys. This is considered by some as being a superior mode of proceeding, in consequence of the work being more divided, and the horses resting some hours in the most hot parts of the day.

During the summer, except in the time of labour, the team horses are kept in the stable, and permitted to have as much cut clover as they can eat. But in the wheat seed season, and at the time the grain is conveyed to the stack yard, a portion of corn is allowed, and which is continued in more full quantities, as long as the weather keeps suitable for the operations of the plough. In the winter season, when the labour of the team is greatly diminished, the horses have straw with about half a peck of corn in the day. But on some farms the allowance of corn is wholly withdrawn, and properly cleaned potatoes made use of in its place. It is constantly the practice to have these horses carefully cleaned and dressed, and as much under the eye

of the farmer as possible. See HORSE-KEEPER and TEAM.

It is necessary likewise to be very attentive to the feet and shoes of team horses; and the improved methods of fixing and forming them should be had recourse to. Nothing should be pared from the sole or other parts except the rotten loose matters. See SHOENING of Horses.

Some attention is likewise necessary on first turning out horses to grass. It is probably the best practice to inure them to the change gradually, by only letting them remain in the field for a little while on their being newly put to the grass; afterwards increasing the length of their stay, as there may be occasion. It is probably the best time to turn them out in the evening, though the usual time is in the morning. See GRAZING and PASTURE.

HORSE, *Airing of a*. See AIRING.

HORSES, *Backing of*. The first backing of a horse is a thing of great consequence, as his value afterwards very much depends on it. After a colt has been exercised some time, morning and evening, and becomes somewhat obedient, he is to be taken to some ploughed lands, the lighter the better; he must be made to trot over these in the hand, by that means to tire him and abate his wantonness. When this is done, care must be taken that all the tackling be good and firm, and every thing in its due and proper place; then a person is to hold his head, and another to mount him; but this must not be done suddenly, or at a jerk, but very gradually and slowly, by several half risings and heavings. If he bears this patiently, the person is to seat himself firmly on his back; but if he be troublesome, and not tamed enough, the person is to forbear the attempt to mount, and he is to be trotted hard in the hand over the same ploughed lands again, till he is willing to receive the rider quietly on his back. When this is done, the person who is on his back must cherish him, and the man who has his head must lead him a few paces forward; then he is to be cherished again. The feet are to be fitted well in the stirrups, and the toes turned out; afterwards the rider is to shrink and move himself in the saddle, and the person who holds his head is to withdraw his hand a little farther from the mouth. As the rider moves his toes forward, the holder must move him forward with the rein, till he is made to apprehend the rider's motion of body and foot, which must always go together, and with spirit, and will go forward without the other's assistance, and stay upon the restraint of the rider's hands.

When this is accomplished, let him be cherished, and have grass and bread to eat; and then let the rider mount and alight several times, cherishing him between each time: and thus he is to be managed till he will go on, or stand still at pleasure. This being done the long rein may be laid aside, and the band about the neck, which are always used on this occasion, and nothing will be necessary but the trenches and cavesson, with the martingal. A groom must lead the way before; or another horse going only straight forwards, and making him stand still when desired. In this manner, by sometimes following, and sometimes going before another horse on the trot, the creature will by degrees be brought to know that it is his business to be quiet and governable. See FOAL.

HORSES, *Breeding of*. In order to have a good and beautiful race of horses, it is necessary to choose for a stallion a fine barb, free from hereditary infirmities; such as weak eyes, bad feet, spavins, purfines, or the like. Disorders that arise from accidents are of no consequence; nor is the horse to be at all the less valued for them as a stallion. Three months before this horse is to cover a mare, he should be fed with sound oats, peas, or beans, or with coarse bread, and a little hay, but a good quantity of wheat straw; he should be led

out twice a day to water all this time, and after every watering walked about an hour, but not over-heated. If he be not prepared and put in heart in this manner, the colts will be weakly, and the horse himself will be spoiled, growing purfy and broken-winded.

If he is put to too many mares, he will not last long; his mane and tail will begin to fall off through weakness, and it will be difficult to get up his flesh again by the next year. The number of mares should be proportioned to his strength, and twelve, fifteen, or at the most twenty, are as many as a horse will well serve for in a season. Mares go with foal eleven months, and as many days over as they are years old. This being certainly known, it is easy to contrive so that all the foals may be brought forth at a time when there is plenty of grass. About the end of May the mares are to be put into an inclosure capable of feeding them as long as the stallion is to be with them, or that they are in season. In this inclosure all the mares to be put together, as well those which are barren as others. The stallion's hind shoes are to be taken off, but the fore-shoes should be left on to preserve his feet; then lead him forth, and let him cover a mare twice in hand, to render him more tame and gentle. After this take off the bridle and turn him loose among the rest, where he will become familiar with them, and not one of them will be horfed but when they are in season. There should be a little lodge built up in some part of the inclosure, and peas, beans, oats, bread, and other good food, put into the manger in it, that the horse may retire into it in the scorching heats, and eat what he likes best. He must be thus entertained during the whole time he is with the mares, which is to be about six or seven weeks.

Mares that are very fat and gross do not hold well; but those which are moderately fat conceive with the greatest success and ease. To bring a mare in season, it is a common thing to give her a quart of hemp-feed, or twice that quantity, night and morning, for eight days before she is brought to the horse. If she refuse it alone, it may be mixed with beans or oats, and will go down; and if the stallion eat of it also, it will make him the better.

The stallion should not cover before he is six years old, nor after he is fifteen. A mare should never be covered before she is three years old; they should be always found and healthful, and of a good breed; such as these will bring forth better and finer foals than any others. The colts produced from these, are not to be used for stallions; for they will degenerate, and the race will soon become exactly our own country breed. If a barb is not to be had, a Spanish horse is to be chosen. See MARE, and STALLION.

HORSES, *Diseases of.* See BOTTS, CONSUMPTION, COUGH, FARCY, FEVER, GLANDERS, GRIPES, HORSE-worm, &c.

The horse is likewise in some cases subject to the itone.

HORSES, *Eyes of.* See EYES of Horses.

HORSES, *Fattening of.* The being able to do this speedily is one of the greatest arts our dealers have, and indeed is one of the greatest niceties in the whole management of these animals. Many methods have been prescribed; but the following seems most to be depended on; take elecampane, cummin-seed, tamarisk, and aniseed, of each two ounces; common groundsel, one handful; boil all these very well, with two handfuls of garlic, scraped and cleaned, in a gallon of good ale; strain the liquor well off, and give the horse a quart of it every morning made hot; keep him warm after it. After he has taken this for four or five mornings; he may be turned out to grass, or kept in the house, as the season will permit. But whenever provender is given him, a quantity of powder is to be prepared of equal parts of cummin-seeds and elecampane, and give him half an ounce of it every

time, sprinkling it in by degrees as he eats, that he may not naufeate the whole.

If this method does not succeed in a short time, then take two spoonfuls of diapente; brew it in a pint of sweet wine, and give it the horse for three mornings. This will take off any inward sickness, and make the other things take effect. After this feed him with good provender three times a day; that is, after his watering in the morning, after his watering in the evening, and at nine o'clock at night. If he does not eat the provender well and freely, it must be changed for some other kind. If all this does not succeed, let the horse be blooded; and then take half a bushel of coarse barley meal, put it into a pail-full of water, and stir the whole together very well; then let it settle by standing. Pour off the clear liquor into another vessel, and let him drink it for his common drink, and eat the remainder, which falls to the bottom of the pail. If he refuse to eat this alone, there may be some bran mixed among it. This should be given him three times a day, morning, noon, and night. If he does not rightly take to the meal with the bran, some oats must be mixed with it, and this will readily bring him to feed on it. But whichever way is used, they must be by degrees diminished in quantity, till at length he is brought to eat the meal alone; for that is the thing that must fatten him up. Care must be taken that the barley is ground fresh every day as it is used, for it quickly grows sour; and when this has once been the case with one parcel, no art will ever bring the horse to touch any of it afterwards. Scarce any horse but will be well fattened by keeping him to this diet for about twenty days.

Barley ground in this manner cools and purges the creature; but the greatest efficacy, as to the fattening of him, lies in the water, which by this management takes up all the rich part of the barley into itself. When the horse grows lusty on this diet, it must be taken from him by degrees, giving him at first oats once, and barley-meal twice a day; and then oats twice, and the barley-meal once, till he is perfectly weaned from it. In the mean time he must have good hay, and he must not be ridden; only it will be proper to walk him gently about an hour or two in the heat of the day. If it be found that the horse wants a good smart purging during the time of his continuing on the barley-diet, the best time to give it him is after the first eight days, and the following is a very proper sort of physic; take of the finest aloes one ounce, agaric, in powder, half an ounce; the powder of Florentine orrice, one ounce; let all these be mixed together, and put into a quart of milk, warm from the cow. This will work very briskly; and after it is over, the usual diet is to be continued. If horses of value were to be kept to this diet once a year, it would make them less hot and dry, and not subject to many diseases which they are troubled with at present, and would be particularly useful after campaigns and long journeys. If the horse loses his appetite by this diet, it will be proper to tie a chewing-ball to his bit, renewing it so often, till at length he begins to feed heartily on the barley; for these balls at once restore appetite, and are themselves of a fattening nature. See CHEWING-balls.

HORSE on a journey, *Management of a.* The common method of travelling in England being on horseback, it may be proper to give some general rules for keeping the creature sound, and doing the business agreeably, without many of the accidents which usually attend it.

Care must be taken that the shoes be not too straight, and do not pinch the horse's feet any way; but be well shaped, and sit easy. It is proper to have them put on fresh a few days before the journey, that they may last well, and that they

They may be fettled to the feet before the setting out. The bridle is next to be examined; that the bit of it be proper, and not too heavy; for if it be, it will incline him to carry low when he grows tired, and rest upon the rider's hand; this is what they call the using a fifth leg. It is a very disagreeable thing, but may often be avoided, only by taking a proper care of the bit. The mouth of the bit should rest upon his bars, about a finger's breadth from his tushes, so as not to make his lips uneasy. The curb should rest in the hollow of his head, a little above the chin; and if it gall him, the place must be defended with a piece of buff or other sort of leather.

The next thing to be regarded is the saddle; and proper care must be taken as to this, that it do not rest either upon the withers, reins, or back-bone; and that one part of it do not press upon the back, any more than another. Some riders gall a horse's sides below the saddle with their stirrup-leathers. This is most likely to happen to a lean horse; and to prevent it a leather strap should be fixed between the points of the fore and hinder bow, of the saddle, and the stirrup-leathers should be made to pass over these leathers.

It is always best to begin a long journey by short stages; and this is the more necessary, if the horse has not been exercised for some time before. If it be a horse that is ridden, he should be suffered to stale as often as he likes, and even invited to it; but, if a mare, she is to be less indulged in it as less necessary, and often diminishing her strength. It is always advisable to ride very softly for a quarter of an hour, or half an hour before coming in to the inn at night, that the horse may not be over-hot when put into the stable; but if the haste of the journey will not admit of this, the horse should be walked in some person's hands, to cool him gently before he is put up.

If the weather is cold, a cloth should be laid over him while he is walked; and when taken in, his whole body should be rubbed and dried with straw. Some have a custom of ordering their horses' legs to be rubbed well down, on their first coming in; but this is very prejudicial while the horse is hot, and should always be let alone till he is perfectly cooled.

As soon as the horse is cooled, and ceases to beat in the flanks, the bridle is to be taken off, the bit washed, and hay given him, that he may eat at pleasure. The dust in very dry weather will sometimes clog up the tongue of the horse in such a manner, that he cannot eat without great difficulty; in this case some bran and water should be first given him to wash his mouth, or the servant should do it with a wetted sponge.

These are the proper methods when the horse has been rode moderately; but when he has been hurried at a great rate, the saddle is to be taken off as soon as he is put up, and the sweat rubbed off with a sweat-knife; and then the whole body and legs are to be rubbed carefully down, and the head is to be wiped with a cloth, as also the back under the saddle, and the thighs; then the saddle should be clapped on again, and the horse gently led up and down, till cool and dry. The feet are also to be examined, to see if a shoe be wanting, or if any of them press upon the sole; and the dirt, gravel, or other foulness, is to be picked out from between the shoe and the foot. The openings of the feet may be stopped with cow-dung, and the hoofs, if brittle, should be anointed with some fatty substance just at the setting on; and in dry weather they should be greased, not only at night, but noon. Many horses, as soon as unbridled, will lay themselves down, instead of eating.

Many are apt on this to suppose the horse sick; but it is generally owing only to the heat and pain they find in their

feet, which renders them unable to stand upon them. In this case, if their eyes are examined, they will be found brisk and good; and the hay being offered them as they lie, they will eat it greedily. This shews there is no inward disorder, and the heat and tenderness of the feet, if examined, will shew that they are the parts in pain. The principal thing to be done in this case, is taking care that the shoes do not rest upon the soles. This is not easily known, but by taking off the shoes, which in cases of extremity should always be done; it will then be found where the sole is touched by the shoe, being in that part more smooth and shining than elsewhere. In this case the feet are to be pared in those parts, and then the shoes are to be fixed on again, anointing the hoofs, and stopping the soles with hot black pitch or tar.

These are the means by which travelling will be rendered easy and commodious both to the rider and the horse; but there is some care also to be taken of the creature, after he comes off from a long journey. The first thing to be done is to draw the two heel-nails of the fore-feet, and if the shoe be large, then four should be drawn; two or three days after the horse should be blooded, and for ten or twelve days after this he should be fed with wet bran, without any oats; but he is to be kept well littered. The reason of drawing the heel-nails is, that the feet are apt to swell after journeys; and if this is not done, the shoes press upon them in that part, and become very uneasy to them. It is advisable to stop them also with cow-dung for some time; but they are in the wrong who pare them down after taking off the shoes, for the humours being all in motion after this, they are apt to fall into the feet.

If there appear any danger of the creature's legs swelling after the journey, it may be easily prevented by this means: take a quantity of the dung of an ox or cow fresh made; mix it with so much vinegar as will reduce it to a soft paste, and add to it a handful of salt; with this rub all the hips thoroughly up to the knees, and let it dry on; give the water in a pail that evening, that the legs may not be wetted, and the next morning the horse is to be led to water, and the whole remaining matter washed off. The jockies have a very cunning trick to recover the hoofs of a horse injured by a long journey: they make a hole in the foot, and fill it with moistened cow-dung; they keep this in it a month, and the continual moisture occasioned by it makes the hoof grow very quick, and soon recover the proper dimensions; but it soon after dries and shrinks so, that the foot is straightened, and the whole hoof becomes brittle.

Cow-dung, applied to a horse's foot, always moistens the sole; but it dries up the hoof if continued any length of time to it. The best method of recovering a horse's hoofs, is to make a hole in the stable floor, filled with blue clay a little wetted; in this the horse should keep his fore-feet a month; this will have more effect than a small portion of cow-dung in the foot; and the effect will be of so different a nature, that the hoof will be rendered more tough than before, instead of being made brittle by it.

Most horses that are fatigued, or overworked by long journies, have the flanks altered by it, without being purfy; especially horses naturally vigorous, which have been worked too violently. The best remedy in this case, is to give the horse half a pound of honey in the morning, mixed among a feed of scalded bran: if he eats the half pound readily, give him a pound the next morning; continue this till the honey ceases to purge the creature; after this, powder of liquorice may be added to the scalded bran, and this continued some time, and two or three glysters, at convenient distances of time, will be found very serviceable. If the horse

be very lean; it will be proper to give him some wet bran over and above his proportion of oats; and grafs is also very proper, if the creature be not inclined to be purly. This caution, however, is to be had at all times; that excessive feeding may be bad, by subjecting the horse to the farcy. When the horse begins to drink heartily, it is a sign that he will soon recover. Though this sometimes fails, it is a good general rule.

When a horse comes tired into a stable, fresh litter has the virtue always to occasion him immediately to stale. This is known to be a very great advantage to a horse in a tired state; and when the litter is old and dirty, it never has any such effect upon him. If the owners knew how refreshing it is to a horse to discharge his urine on his return from labour, they would be more careful in giving him all means and occasions of it than they are. This staling after fatigue prevents those obstructions in the neck of the bladder or urinary passages, which horses are too subject to; the bladder being often inflamed by the long retention of the heated urine in it, and the creature perishing by it. Some of our farmers act wrong in this case of the litter, not through carelessness or accident, but by principle; they order the old litter to be left a long time in the stables, that it may be impregnated with more and more of the urine, &c. of the animal, and be made richer for the fields. It is not to be doubted but the manure is greatly improved by this; but the damage done to the horse by it, is greatly over-proportioned to the benefit. The heat which the dung acquires, by thus lying together, spoils the feet of the creature, and makes it unfit for any service, and occasions many distempers, which are ignorantly continued and increased by the continual addition of heat in the fermenting dung, till at length the horse perishes.

Those who have any concern with horses know, that it is sometimes very difficult to make them lie down in the stable. The following simple method is proposed for this purpose by a noted dealer. When you have a mind to make him lie down, take a piece of strong pack-thread, or a cord, and tie it as tight round the horse's tail as possible, without breaking the skin, and as near as you can to the rump-bone: this will give him a pain in the back, and he will be glad to change his posture, to get ease; and when he finds he cannot in any other way procure it, he will lie down, which he will find the most easy posture, and he will of course take a liking to it.

HORSES, Watering of. Whilst a person is on a journey, the horse should always be suffered to drink of the first good water he comes to after seven o'clock in the morning in summer, and after nine or ten in the winter. Moderately pure water is to be preferred, that being best of all which is neither too clear nor penetrating, nor muddy and stinking. Though it is the custom in England to run and gallop horses after drinking, which we call *watering courses*, and which we suppose brings them into wind, yet Sollyfel, and many other of the best judges of horses, tell us, that it is one of the worst and most pernicious practices that we can be guilty of; no good can accrue from it, and many horses are rendered purly by it.

While a horse is drinking, the rider should draw up his head five or six times, making him move a little between every draught. The rider need not be afraid of giving him water, with proper moderation, even in almost any circumstances. If he be warm and sweat very much, yet if he is not quite out of breath, and there are four or five miles to ride, he will be better after drinking a little, than if he had drank none at all; only observing, that if the horse were very warm at his going into the water, his pace must not be

less than a moderate trot when he comes out, that he may not be chilled.

In the time of a journey the horse ought to be suffered to drink in this manner of the waters that come in the way, as often as may be; for if the rider happens to bait when he is hot and sweaty, he must not be suffered to drink for a long time, as it would endanger his life; and if he has not been watered in this manner on the road, his excessive thirst will often prevent his eating, and he will not be able to touch any sort of food for an hour or two, which is usually more time than the rider can stay: and yet without eating at baiting times, he will not have strength to go on. The giving him water on the road will, on the contrary, keep him ready for food whenever it is offered him, and the rider need stay no longer than his own refreshment requires, the horse eating immediately, and being readily qualified to go on again.

If there be any shallow water in the way a little before the coming to the inn where the horse is to rest all night, it is always proper to ride him in, and not only give him a little drink, but ride him about several times, not quite up to the belly; this will clean his legs, and prevent humours from falling down into them. If the horse be very warm, and there has been no convenience of watering him upon the road, the oats that are given him should be first steeped a-while in ale; this will induce him to eat, though he could not have touched any that were wholly dry.

Many are of opinion that horses are sometimes spoiled by giving them oats before their water; but Mr. Sollyfel affirms, that though it be not the custom to give oats till afterwards, yet it never does any harm to feed the horse with them both before and after drinking; and that it is often proper and necessary, especially when the horse has been hard rid, and is warm.

HORSE, Draught, in Farming, a sort of coarse-made horse destined for the service of the cart or plough. In the choice of these horses for what is called the slow draught, they are to be selected of an ordinary height, for otherwise when put into the cart one draws unequally with the other. The draught-horse should be large bodied and strong-joined, and of such a disposition, as rather to be too dull than too brisk, and rather to crave the whip than to draw more than is needful. Mares are the fittest for this use for the farmer, as as they will be kept cheap, and not only do the work, but be kept breeding, and give a yearly increase of a foal. They should have a good head, neck, breast, and shoulders; for the rest of the shape it is not of much consequence. Only, for breeding, the mare should have a large belly; for the more room a foal has in the dam, the better proportioned it will be. Draught-horses should be always kept to that employ. Some put them to the saddle on occasion, but it does them great harm, alters their pace, and spoils them for labour. The draught-horse ought to have a large broad head, because horses of this shaped head are less subject than others to diseases of the eyes. The ears should be small, straight, and upright; the nostrils large and open, that he may breathe with the more freedom. A horse with a full and bold eye always promises well. On the other hand, a sunk eye and an elevated brow are bad signs. The horse is esteemed fittest for this purpose also, that has a large and round buttock, which neither sinks down nor cuts. He must have a firm and strong tail, and the dock must be thick and well furnished with hair, and placed neither very high nor very low. The legs should be rather flat and broad than round: the roundness of the leg being a fault in a horse destined to labour, that will soon run him. As to the hinder legs, the thighs should be fleshy and long, and the

whole muscle which shews itself on the outside of the thigh should be large and very thick. No country can bring a parallel to the size and strength of our horses destined for the draught. In London there are instances of single horses that are able to draw on a plain, for a small space, the weight of three tons, and which can with ease, and for continuance, draw half that weight. The pack horses of Yorkshire usually carry a burden of four hundred and twenty pounds, over the highest hills of the north, as well as the most level roads: but the most remarkable proof of the strength of our British horses is derived from that of our mill-horses; some of which will, at one load, carry thirteen measures, which, at a moderate computation of seventy pounds each, will amount to nine hundred and ten pounds. Nothing is so essential to the health of these serviceable creatures as cleanliness; if they are fed ever so well, and not kept clean, they will be subject to numerous diseases.

The servant who has the care of them ought to be up very early, and to clean the racks and mangers from all filth. The currying of them ought to be carefully performed every morning, but not in the stable, for the dust to fall upon the other horses, as is too often done. After the horses are dusted, they should daily twist a whisp of straw hard up, and wetting it in water, rub the legs, shoulders, and body with it. Many of the diseases of draught-horses, which are not owing to nastiness, are owing to bad water; such as is too raw, too muddy, or too cold, being all improper. If there be any running stream in the neighbourhood, they should always be led to that water, every day in summer, but in winter, well-water is warmish, and is better for them. If there be a necessity of giving them well-water in summer, it must be drawn up some hours before the time, and exposed to the sun-beams in tubs or troughs; marsh-water, or that of lowland ditches, is worst of all. When the labouring horse has drank his water, he should have his oats given him, and these should be carefully sifted, and the manger dusted first. It is a common practice as soon as a horse is come in from his work, to rub down his legs with a hard whisp of hay, but the best judges of horses absolutely condemn this, and observe, that this rubbing of the legs after hard labour, brings down humours into them, and makes them stiff.

The rubbing itself is wholesome, but the doing it when the creature is hot is the mischief; while a horse is in a sweat it is a great relief and refreshment to him to have his body rubbed down, but when he is cold is the proper time to rub his legs. The racks are to be well supplied with hay, and the horses should be left to rest and eat, about two hours, and then led to water; after this their oats should be given them, and they should then go to work again.

In the evening, when the labour of the day is over, the first thing to be done, is to examine the feet, and see if any thing is amiss about the shoes, and what earth or gravel is lodged in the foot, between the shoe and the sole, is to be picked out, and some fresh cow-dung put in its place, which will cool and refresh the part.

A very material thing for the preservation of all sorts of cattle, but of none so much as draught-horses, is fresh and clean litter.

HORSE, *Hunting*. See HUNTER.

HORSE, *Race*. See RACING.

HORSE, *Stone*. See STALLION.

HORSE, *War*. The proper rules for chusing a horse for service in war are these; he should be tall in stature; with a comely head, and outswelling forehead. His eye should be bright and sparkling, and the white part of it covered by the eye-brow. The ears should be small, thin,

short, and pricking; or, if long, they should be moveable with ease, and well carried. The neck should be deep, and the breast large and swelling. The ribs bending, the chine broad and straight, and the buttocks round and full. The tail should be high and broad, neither too thick nor too thin; the thigh swelling; the leg broad and flat, and the pattern short. When such a horse is chosen, he must be kept high during the time of his teaching, that he may be full of vigour. His food must be sweet hay, and good clean oats, or two parts of oats, and one part of beans or peas, well dried and hardened. The quantity should be half a peck in the morning, and the same quantity at noon, and in the evening. Upon his resting days he is to be dressed between five and six in the morning, and watered at seven or eight. In the evening he is to be dressed at four, and watered about five, and he must always have provender given him after watering; he must be littered about eight, and then must have food given him for all night.

The night before he is ridden all his hay is to be taken away about nine o'clock, and he must have a handful or two of oats about four in the morning; when he has eaten these, he is to be turned upon the snaffle, and rubbed very well with dry cloths; then saddled, and made fit for his exercise. When he has performed this, he is to be brought sweating into the stable, and rubbed down with dry whisks. When this has been done, the saddle is to be taken off, and he is to be rubbed down with dry cloths; the housing-cloth is then to be laid on, and the saddle being again laid on, he is to be walked gently about till thoroughly cool. After this, he must stand without meat two or three hours, then he must be fed; and in the afternoon he is to be rubbed and dressed as before, and watered in the usual manner.

HORSE, *River*, in *Zoology*. See HIPPOPOTAMUS.

HORSE, *Sea*. See HIPPOCAMPUS.

HORSE is also used, in the *Military Language*, to express the cavalry (see CAVALRY); or the body of soldiers who serve on horseback.

The horse includes horse guards, horse grenadiers, and troopers. Dragoons are also frequently comprehended under this name, though they fight on foot as well as on horseback. See DRAGOONS, GRENADIERS, and GUARDS.

Horse guards, by the Spaniards called *guardas a cavallo*; by the French, *gardes de corps*; by the English usually *life-guards*; are the guards of the king's person and body.

The duty is, by parties from the guard, to attend the king's person when he goes out near home; an honour which has been lately appropriated to the *light-horse*. On state-days he is attended by detachments out of the horse and grenadier guards.

One of three captains of the horse-guards attends on the king when he walks on foot, immediately next his person; carrying in his hand an ebony staff, or truncheon, with a gold head.

HORSE-*Artillery*, a comparatively novel institution in the *Military Art*, by which the force of cavalry and ordnance is united with the most rapid movements, executed with machines that were once so cumbrous. This new artillery is organized on such principles as to perform movements the most rapid and the most unexpected. Thus it can proceed with celerity either to a point threatened by the enemy, or a post which, by a decisive attack, it is intended to carry; follow the horse every where, if needful, and brush the enemy by the combined effect of all the means of attack and defence which the theory of the military art, judgment, and experience can suggest.

In the campaigns of 1757-8-9 against the Russians, it often

often happened that the Prussian light-horse, at the very moment when they imagined themselves to be sure of success, met with a battery of cannon, though no infantry were present, which led them to suppose that the Russians had horse-artillery, able to follow all the movements of the horse. The fact being ascertained, Frederic the Great introduced this artillery into his army in the spring of 1759, at his headquarters at Reichenendorff, near Landshut, where every morning he exercised this new corps himself, and directed its manœuvres. The king also made a successful trial with his horse-artillery before he left that camp, by covering it with a reconnoitring party beyond Liebau, on the retreat of his dragoons, in a manner so effectual, that all the attacks of the enemy's horse, though far superior in number, completely failed. The Austrians were the first who instituted this new military establishment: in 1783 they manœuvred with horse-artillery near Prague; and since that time, it has been introduced into the British, Swedish, Saxon, and Hanoverian armies; yet with considerable difference as to the calibre of the ordnance, and the way of mounting the artillery-men. The Prussian horse artillery consists of six-pounders, the Austrian of light three-pounders, the Hanoverian of heavy three-pounders, the Danish of one-pounders, &c. The Prussian artillery-men are on horse-back; the Austrians ride on the carriages of the guns; the Hanoverian party ride partly on horse-back, partly on the gun-carriages, wursts, &c. But no European power has hitherto derived such important advantages from this new artillery as France, where it was introduced in the year 1792, and soon carried to great perfection. In order to give it the advantage of a superior fire, the French flying, or horse artillery consists of eight-pounders, and six-inch howitzers; the ammunition is carried in light caissons, and most of the artillery-men are mounted, whilst others ride on the wursts. By this arrangement, in addition to the known abilities of the French cannoniers, the Republican horse-artillery soon acquired a decided superiority over that of the Austrians, and maintained it during the whole war. The formation of the horse-artillery in France took place in the year 1791, under royal orders carried into effect by M. Duportail, minister at war, who directed that two companies of artillery-men should be established by the commandant of the military division at Mentz: and a short time before the declaration of war in 1792, M. de Narbonne, who had succeeded M. Duportail, assembled a military committee, consisting of the most experienced officers in the artillery and engineer departments, aided by the advice of the generals commanding the three grand divisions of the whole French army, and issued a number of resolutions for giving effect to this institution. It was determined, that with respect to the mode of being armed, equipped, accoutred, &c. the mounted artillery was to differ from the field ordnance only by the rapidity of its movement; on this account the horses were to be strong and active; and moreover it was considered most advantageous to the service to mount the cannoniers on horse-back, in preference to artillery carts; and that without absolutely excluding pieces of larger calibre, eight or twelve pounders and howitzers seemed best adapted to the nature of this service. It was also resolved that it would be superfluous to drill the mounted artillery-man, so as to make him master of all the cavalry manœuvres; it being thought fully sufficient for him to sit his horse well, to be able to mount and dismount with ease and celerity, to guide his horse according to the position of his piece, and to leave it entirely to his own judgment to act with the cavalry, should he find himself involved in their manœuvres.

The British government, which was among the first in

adopting this military institution, established a brigade of six troops of horse-artillery, consisting of a colonel, two lieutenant-colonels, one major, six captains, six captain-lieutenants, twelve first lieutenants, six second lieutenants, one adjutant, one quarter-master, one surgeon, four assistant-surgeons, one riding-master, six serjeant-majors, seven quarter-master-serjeants, eighteen serjeants, eighteen corporals, forty-two bombardiers, five hundred and eighty-two gunners, four hundred and twenty-six gunner-drivers, twenty-four farriers, six smiths, twelve collar-makers, six wheelers, six trumpeters, six hundred and eighteen riding-horses, and eight hundred and fifty-eight draught-horses.

HORSE, *Hungarian*. See CAVALRY and HUSSARS.

HORSE, *Light*. See CAVALRY.

HORSE, *Master of the*. See MASTER of the Horse.

HORSE is also a term used in various arts and manufactories, for something that helps to sustain their work from the ground, for the more commodious working at it.

The horse used by tanners and skinners, also called the *leg*, is a piece of wood cut hollow and roundish, four or five feet long, and placed aslope; upon which they pare their skins to get off the dirt, hair, flesh, &c.

HORSE is also used, in *Carpentry*, for a piece of wood jointed across two other perpendicular ones, to sustain the boards, planks, &c. which make bridges over small rivers; and on divers other occasions.

HORSE, in *Mining*, is one of the very numerous designations which have been given by practical men to the fissures and dislocations of the strata met with in coal-pits and other mines. See FAULT.

HORSE, in *Rural Economy*, the name of a sort of wooden frame strongly put together, for the purpose of sawing and cutting wood upon.

HORSE, in *Sea Language*, is the name of a rope reaching from the middle of a yard to its extremity, or what is called the yard-arm, and depending about two or three feet under the yard, for the sailors to tread upon, whilst they are loosing, reefing, or furling the sails, rigging out the fludding-sail-booms, &c. In order, therefore, to keep the horse more parallel to the yard, it is usually suspended to it, at proper distances by certain ropes called *stirrups*, which hang about two feet under the yard, having an eye in their lower ends through which the horse passes.

HORSE is also a thick rope extended in a perpendicular direction near the fore or after-side of a mast, for the purpose of hoisting or extending some sail upon it. When it is fixed before a mast, it is calculated for the use of a sail called the square-sail, whose yard being attached to the horse, by means of a traveller, or bull's eye, which slides up and down occasionally, is retained in a steady position; either when the sail is set, or whilst it is hoisting or lowering. When the horse is placed abaft or behind a mast, it is intended for the try-sail of a sloop, and is accordingly very rarely fixed in this position, except in those sloops of war which occasionally assume the form of snows, in order to deceive the enemy. Falconer's Mar. Dict.

HORSE is also a cant name introduced into the management of lotteries, for the chance or benefit of a ticket, or number, for one or more days, upon condition, if it be drawn a prize within the time covenanted for, of returning to the seller an undrawn ticket.

To determine the value of a horse.—Multiply the amount of the prizes in the lottery by the time the horse is hired for; and from the product subtract the amount of the number of prizes by the value of an undrawn ticket into the time of the horse: the remainder being divided by the number of tickets

into the whole time of drawing, the quotient is the value of the horse. See **LOTTERY**

HORSE-back, in *Mining*, is applied to the humps or swellings on the top of some particular strata, which are subject to such anomalies, and which are also called bumps, ridges &c.

HORSE Bean, in *Gardening*. See **BEAN**.

HORSE Beech. See **CARPINUS**.

HORSE Bones, Fossil, in *Natural History*. In digging in the peat and silt of fens and marshes, it is not very uncommon to meet with the skulls and bones of horses, as in Hatfield chace, in Yorkshire, and the Isle of Dogs, in Middlesex. (Parkinson's *Organic Remains*, vol. i. p. 67 and 95.) The great comparative anatomist, M. Cuvier, in a Memoir on this subject, in the *Ann. de Muséum*, tome xiv. page 33, or *Philosophical Magazine*, vol. xxxv. p. 216, after mentioning a great number of instances and specimens preserved, of the bones of horses which had been dug up, both in modern alluvial flats, and also in quarries accompanied by the bones of unknown and extinct animals, gives the osteological characters of the horse, and confesses that though they may serve to distinguish the modern or peat fossils, they are insufficient for determining, in most instances which occur, to what species, or whether to any of the known species of the genus equus, the fossil remains in the strata are to be referred. (See *Phil. Mag.* vol. xxxv. p. 388.) The pretended bones of a horse found in the alum-works of Saltwick, and mentioned by Mr. Charlton in his "History of Whitby," p. 355, were probably those of an extinct animal.

HORSE bramble, in *Agriculture*, a common name often applied to the briar or wild rose of the field.

HORSE-bread. Bread of a proper kind is often given to horses to hearten and strengthen them when they have gone through great fatigues, or are to prepare for such. Common household-bread will answer the purpose, but the more common way is to prepare a kind of bread on purpose. There are two different receipts for making this sort of bread, each of which has its admirers. The first method is this: take wheat-meal, oat-meal, and beans ground fine, of each half a peck; aniseed, two ounces; gentian and fenugreek-seed, of each an ounce; liquorice, two ounces: let all these be made into a fine powder, and sifted together, that they may be perfectly mixed; then add the whites of twenty new-laid eggs, and as much fine ale as will knead the whole into dough. This is to be made into loaves, and well baked, but not burnt; and the horse is to have a good quantity of it every morning for five or six days, without any other provender.

The other method is much nicer, but perhaps does not any way better answer the intended purpose of heartening up the creature. It is this: take wheat-meal, rye-meal, bean-meal, and oat-meal, of each half a peck; aniseed and liquorice, of each an ounce; white sugar-candy, four ounces: beat all these into powder, and sift them together; then add the whites and yolks of twenty new-laid eggs, and as much white-wine as will make the whole into a dough. Let this be made into great loaves, and well baked; it must not be given the horse too new, but when it has stood about three days it may begin to be used; the outside is always to be chipped off when any of it is given. These are the two sorts of bread usually given to prepare horses for long journeys. But there are three other receipts for making bread for race-horses, which are as much esteemed, and are given by our expert jockies for the second, third, and fourth fortnight's feed. The first kind is made in this manner: take three pecks of clean beans, and one peck of fine wheat; let these be ground together, and kneaded into

dough, with a large quantity of fresh barm or yeast, but with as little water as may be: when this has heaved and worked up a little, let it be kneaded again, and then made into large loaves and carefully baked; when three days old it may be given to the horse, but not sooner.

The second sort is to be made as the other, only with equal quantities of beans and wheat, and the crust of this is to be cut quite away before it is eat. This is to be given to the horse at his usual meals, either alone, or mixed with oats and split beans.

The third sort of bread is stronger than either of the others, and is to be made thus: take three pecks of wheat, and one of beans; let them be ground together, and made into very fine flour; knead this up into dough with a good quantity of yeast dissolved in as much strong ale as is necessary; add the whites of twenty eggs, and make the whole into large loaves. These must be thoroughly baked, and when they have stood three days, the crust must be cut off, and the crumb only given, either alone, or mixed with oats or split beans. This is to be the food for the last fortnight.

HORSE Chestnut, in *Gardening*. See **ÆSCULUS** and **CHESTNUT Tree**.

HORSE Chestnut, Petrified, in *Natural History*. In that fruitful soil for vegetable resemblances, the pyritic cliffs of the upper part of the London clay in Sheppy island, in the Thames, Mr. Jacob mentions a nut resembling the horse-chestnut of America: the reality of its being a nut of any kind is much to be questioned, from the circumstances attending it.

HORSE Course. See **HIPPODROME**.

HORSE-dung, in *Agriculture* and *Gardening*, the name of that sort which is produced by the horse in the stable or other place. As it exists in these situations it is generally much blended and intermixed with different sorts of straw materials, which, from their disposing the dung to take on heat more readily, render it of great utility in different views of field and garden culture. It is this property of running speedily into the state of fermentation that makes it so useful in the forming of hot-beds in the gardens, in order to raise several different early productions of the culinary kind, as well as many tender plants of other descriptions.

That which is the most proper for this use, in general, is such as has continued together in the common dung-hill until a considerable heap has been formed; and where it has already commenced the incipient stage of fermentation, and is become either wholly or partially moist warm, and capable of sending forth some degree of steam, it is still more suitable for the purpose. When, on turning it up with the fork, it puts on a sort of blackish appearance, and is dry without being rotten or exhausted, and abounds with a fresh substantial material that has a lively, moist, steamy warmth, it is in the most proper condition for the construction of hot-beds. But dung that is of a fresher quality, yet moist and full of steamy litter, is highly desirable, as it is readily capable of being brought into the proper state. With this raw sort, the best plan is to have it thrown up and well mixed together, before it be employed in constituting the hot-beds.

Where it is intended to be used merely as manure, whether in the field, or the garden, it is the most proper for almost every kind of crop, when it has passed into a considerably more reduced state, and is become more soft and more imbued with moisture. On this account, it is found extremely useful in raising various sorts of culinary vegetables in the open ground, after it has been employed

ployed in the forcing-frames, or other hot-bed culture. It is essential, in all large gardens, to have full supplies of this sort of materials always at hand during the seasons at which it is likely to be wanted. See DUNG, HOT-bed, and MANURE.

HORSE-engine, in *Mining*, is applied to the gins which are used at some of the lead-mines, similar to those of the coal-mines for drawing their ore and vein-stuff, and their water also, in barrels, in some few instances. See WINDING Engine.

HORSE-fly, in *Entomology*. See HIPPOBOSCA Equina.

HORSE-gin is a vertical axle and large cylinder or drum, turned by horses, for drawing coals or ores from pits or mines, &c. See WINDING Engine.

HORSE-gold, in *Mining*, is in some districts used to denote the hematites, or yellow pyrites.

HORSE-hairs, animated, a term used to express a sort of long and slender water-worm, of a blackish colour, and so much resembling a horse-hair, that it is generally, by the vulgar, supposed to be the hair fallen from a horse's mane into the water as he drinks, and there animated by some strange power. Dr. Lister has at large confuted this absurd opinion, in the Philosophical Transactions. See AMPHIBIENA aquatica.

HORSE-hair-worms. See AMPHIBIENA.

HORSE-heal, in *Botany*. See STAR wort.

HORSE-hoe, in *Rural Economy*, a name given to that sort of hoe, which is drawn by the labour of the horse. See HOE.

HORSE-hoeing, a term signifying the operation of stirring, breaking down, and cultivating the soil, between the rows of grain, and other kinds of crops, by the use of the horse-hoe. See HOEING.

HORSE-island, in *Geography*, a small island of Scotland, in the Frith of Clyde, near the coast of Ayrshire. N. lat. $55^{\circ} 41'$. W. long. $4^{\circ} 52'$.

HORSE-islands, a cluster of small islands near the E. coast of Newfoundland. N. lat. $50^{\circ} 25'$. W. long. $55^{\circ} 30'$.

HORSE-keeper, in *Agriculture*, a name applied to the person, or servant, who has the charge of keeping, and looking after, team or other horses. It is necessary he should be well qualified for his business, as without a steady regular horse-keeper, the farmer may sustain great injury and loss in various ways; while, with a proper manager, his savings may be considerable, without the condition of the animals being in the least impaired: It forms part of the constant attention of the horse-keeper to see that the horses of which he has the charge, are properly cleaned, watered, and fed as soon as they return from their labour, and that their feet be well cleared beneath the shoe, by the picker, from all sorts of little stones and earthy matters. The shoes should likewise be carefully examined, to see that they are perfectly fast and in order. Good shoes usually last something more than a month. It is also proper for this person to take care that they have plenty of litter, and that it be properly applied, as well as that their feeds of oats and cut meat be given them in a regular manner, and in sufficient quantities: The usual periods of feeding with grain are morning, noon, and night, and the proportion for each horse, each time, from a quarter to half a peck, with frequently about two handfuls of beans, and sometimes cut chaff. The oats should be well sifted, to clear them from dunt, sand, &c. It is necessary, in addition, to let them have water twice, or oftener in the course of the day. See TEAM.

Another part of the duty of the horse keeper is, that of taking care of, and keeping the harness, &c. in proper order. This is done by preserving them constantly clean

and well oiled. When not in use, they should always be hung up carefully in their proper room or place after having the dirt, &c. well cleaned from them.

HORSE-knobs, a common name frequently applied to knob or knap weed.

HORSE-leech, in *Zoology*. See HIRUDO sanguifuga.

HORSE-line, in *Nautical Affairs*, signifies the long line or rope used for towing or dragging of barges or boats on navigable rivers and canals; it is usually fastened to the top of the mast on wide rivers, and to the top of a short mast in canal-boats, called the chock, which can pass under the bridges, and from which the line can readily be unhooked or cast off by the boat man, to pass bridges which have no towing path under them. See CANAL.

HORSE-load, is a denomination of a measure or quantity in several different counties, chiefly of corn or lime. At Lancaster the load of barley is 6 bushels, of oats $7\frac{1}{2}$ bushels, and of wheat, beans, or peas $4\frac{1}{2}$ bushels; at Manchester the load of beans is 5 bushels, and of oats 9 bushels; at Ulverstone a load of oats is 6 bushels, and of wheat $4\frac{1}{2}$. In most parts of Derbyshire a load of corn is 8 bushels; in many places the load or weight is five bushels. A load of lime in Derbyshire is 3 heaped bushels.

HORSE-mackarel, in *Ichthyology*. See SCOMBER trachurus, or SCAD.

HORSE-measure, that sort of measure which is employed to ascertain the heights of horses, which is done by a sort of box rod, so contrived as to slide out of a cane, having a square at the end, which is divided into hands and inches, by which a horse, or any other animal, may be measured.

HORSE-mint. See MINT.

HORSE-muscle. See MUSCLE.

HORSE-muscle Shells, in *Natural History*. The late Mr. Whitehurst, in describing the strata of Derbyshire, Inquiry concerning the Earth, p. 208. 2d edit., mentions the shells of fresh water horse muscles, as found in abundance in a thin stratum of iron-stone. Mr. William Martin, in his Petrifacata Derbienia, plate 27, figures and describes this shell, and denominates it the mya ovata of Dr. Maton; it has been said, however, by competent judges, that the above authors were influenced too much by their theory of the coal-measures being formed in fresh water, and that the resemblance is not exact between the shells of the muscle-band iron-stone, or iron-stone marble, (the course of which, through Derbyshire and into Yorkshire, is described in Mr. Farey's Report, vol. i.) and any recent or known shells whatever.

HORSE-path, in *Engineering*, is sometimes applied to the towing-path which is constructed by the side of all canals, and by narrow navigable rivers, for the use of the towing or track horses. See HAULING way.

HORSE power, in *Mechanics*. Among practical mechanics it has been usual, of late years, to estimate the power of large machines and engines by the number of horses to whose work they are equivalent, applied to a horse-wheel, during a given time. This term was introduced when steam-engines first began to supersede horse-mills, in such numerous branches of English manufactures, and when it was natural for the manufacturer to enquire how many horses a steam engine would dispense with in his works, and at what first cost of erection, and per annum in coals, attendance, and repairs afterwards. Messrs. Bolton and Watt's present estimate of this power is, as we are informed, 32,000lb. raised one foot per minute; the late Mr. Francis Thompson of Ashover, Derbyshire, who erected a good many engines, used to estimate it at 33,000lb. Defagulier's experiments, when thus reduced, give 22,000lb.; and another experi-

ment 27,500lb.; those of Mr. Samuel Moor, the late secretary to the Society of Arts, give 21,120lb.; Mr. Olinthus Gregory, in his *Mechanics*, states 18,480lb.; Mr. James Watt 20,000lb.; and the experiments of Mr. Smeaton give 22,750lb. raised one foot high in one minute, as above: perhaps 22,000lb. may be a proper mean for the actual work of a horse, and is equivalent to 100lb. $2\frac{1}{2}$ miles per hour. See **FORCE**.

HORSE-radish, in *Gardening*. See **COCHLEARIA**.

HORSE-rake, in *Agriculture*, a name applied to a large sort of rake which is usually drawn by a horse, and frequently in use in the more southern parts of the kingdom. It answers well for stubbles, and large horse-rakes for hay are now likewise found very beneficial. See **RAKE**.

HORSE-river, or *Rio de Cavallos*, in *Geography*, a river of Mexico, which runs into the bay of Honduras, N. lat. $15^{\circ} 48'$. W. long. $86^{\circ} 45'$.

HORSE-run, in *Engineering*, is a simple and useful modern contrivance, for drawing up loaded wheel-barrows of soil from the deep-cuttings of canals, docks, &c. by the help of a horse which goes backwards and forwards, instead of round, as in a horse-gin, which we have fully described in our article **CANAL**.

HORSE Stealing, the taking of horses from the pasture grounds or other places, by persons who have no claim or right to them whatever.

It is a practice which is very prevalent, notwithstanding the very heavy punishments and severe penalties that are inflicted in cases of detection. There is much difficulty in providing any full and adequate remedy for this nefarious practice; it has, however, been suggested as the best mode of security to lock "upon the shank or paster of the horse, a case hardened, and fire proof iron ring, lined with some soft material to prevent chafing, and bearing the owner's name and place of abode," though "some have preferred the fixing a collar upon the neck," but "which is rather more expensive, and perhaps less secure from the fire," yet "in either case the price would not be any great object. It is granted, there would be no absolute security in this plan, since thieves get their bread by their ingenuity; but it would certainly place a very great and formidable difficulty in the way of the exercise of their calling. There are few thieves, but who, on inspection, would prefer a horse without this troublesome mark upon him. Granting a man did his business at random, and blundered upon a horse in the dark bearing the aforesaid mark, as soon as the light should enable him to discover it, he would, no doubt, run away from his new and dangerous bargain as fast as he would from a thief-taker. Suppose even a man went prepared with tools proper to destroy the iron, he must have an assistant, and the operation would require some time, which would risk a discovery. In cases of strays, the security is complete. But, in all cases, it seems the present trouble is supposed to outweigh the eventual benefit of precaution." But this is left to the attentive calculation of such as are interested in the matter. Where the horses are of the more valuable kinds, no methods of precaution which have any chance of being useful should be neglected.

HORSE-tail, *Shrubby*, in *Gardening*. See **EPHEDRA**.

HORSE-tail plant, *Petrified*, in *Natural History*. In that fruitful repository of extraneous fossils, the cliffs of the upper part of the London clay strata in Sheppy island, in the Thames river, the strata of which seem to answer to those just now exposed by the tunnel and deep-cutting for the new road on the east side of Highgate town, Mr. Jacobs describes (*Plantæ Favershamienses*, p. 138.) joints of the equisetum or horse-tail plant, as sometimes found, of the

naked species, three inches long. Dr. Grew, in his catalogue of "Rarities" of Gresham college, p. 268. mentions a horse-tail plant or hippurites, a stone with the impressed figure of three stalks, elegantly rising up from one root, preserved in that collection.

HORSE-tree, a common name signifying the same thing as whippin, whipple, or swingle tree, when applied to the draught of tools of different kinds.

HORSE, Wooden, an instrument of military punishment, formerly much in use in different services. The wooden horse was formed of planks nailed together, so as to form a sharp ridge or angle about eight or nine feet long, which ridge represented the back of a horse. It was supported by four posts or legs, about six or seven feet long, placed on a stand made moveable by trucks; and in order to complete the resemblance, a head and tail were added. When a soldier or soldiers were sentenced by a court-martial, or ordered by the commanding officer of the corps to ride this horse, they were placed on the back with their hands tied behind them, and frequently, as an increase of the punishment, had muskets tied to their legs, to prevent, as it was jocularly said, their horse from kicking them off; this punishment being chiefly inflicted on the infantry, who were supposed to be unused to ride. At length, riding the wooden horse having been found to injure the men materially, and sometimes to rupture them, it was left off.

HORSE Worm, in *Natural History*, a species of fly-worm called also *bott*, produced of eggs deposited by a two-winged fly, of the shape and size of the humble-bee, in the intestines of horses. See **BOTTS**.

HORSES, in *Engineering*, is applied in some maritime districts to the jetties or erections of wood or fascinery, made to protect the sea walls from the waves.

HORSE-BLOCK See **ANABATHRA**.

HORSE-MAN, the name given to a particular species of pigeon, called by Moore the *columba tabellaria minor*. It very much resembles in shape the carrier-pigeon, but it is smaller, and shorter necked; the protuberant flesh on the beak, and round the eye, is also less in quantity; it is more barrel-headed also, and the eye is somewhat pinched. It is a matter of dispute whether this be an original species of pigeon, or a bastard between the carrier and tumbler pigeons.

There are of this species of all sorts of feathers, but the blue and blue-pieds are the most valued. These are one of the sort of pigeons made use of in England for carrying letters, and flying for wagers; for the true original carriers are now very scarce, and not risked on every trifling occasion.

HORSEMANSHIP, the art of breaking, disciplining, and managing horses.

Horsemanship, in its latitude, includes what relates to the knowledge of the make, colour, age, temper, and qualities, of horses; their respective countries and climates, with the manner of breeding, propagating, &c. the discovery of the uses or service they are fitted for; whether the wars, the race, the saddle, or labour; and forwarding and accommodating them for this purpose.

In this general sense it also includes the knowledge of the defects and diseases of horses, and the remedies proper for the same, with the several operations requisite thereto, as *docking*, *gelding*, *shoeing*, &c. and thus takes in the farrier's province.

But the word is in a more peculiar manner understood of the art of riding, or of directing a horse to advantage; not only in the ordinary motions, but more especially in the managing, or making him work upon voltes, airs, &c. See **MANÈGE**.

HORSHAM, in *Geography*, a market and borough town in the rape of Bramber, and county of Suffex, England, is traditionally said to derive its name from Horsh, a Saxon chieftain, who is supposed to have had either a place of residence here, or to have achieved some victory in this part of the country. There is no record preserved, however, of either event, and the origin of the place may be as rationally referred to some other person or circumstance. In the county of Norfolk is another parish of the same name, which has equal claims to the same etymology. Of the present Horsham, we do not find any early records; though it is stated to have returned two members to parliament in the reign of king Edward I. This privilege it still retains, as a prescription borough. Its civil government is vested in a steward, two bailiffs, and two constables; whilst its election franchise is confined to 25 burghage holders, *i. e.* persons occupying, or possessing burghage houses, or lands within the borough. These are now wholly the property of the duke of Norfolk; who, consequently, has the unrestrained power of nominating and appointing the members. The county gaol, for Suffex, stands near the south-eastern extremity of this town. It is a large convenient edifice, and is built conformably to the plan recommended by Howard. From ancient custom, the assizes for the county of Suffex are alternately held here, and at Lewes; at this place, the petty sessions are also held. The church, a large irregular building, contains two old tombs, besides mural tablets of modern date. In the town are four other places of worship, belonging to different sects of dissenters. Here is a free-school, which was originally endowed with 30*l.* a year for a master, and 20*l.* for an usher. In 1801 the town contained 573 houses, and 3204 inhabitants. Here is a weekly market on Saturdays, which is noted for its poultry; and the last Tuesday of every month is appropriated for a cattle market. Here are four annual fairs. Horsham is 41 miles S. of London, and 20 miles N.W. of Brighton.

In the vicinity of the town are the following seats: Hills, lately belonging to lady Irving. Field Place, the seat of Timothy Shelley, esq. New Lodge, the seat of I. Aldridge, esq. Coolhurst, Edward Carter, esq. Den Park.

HORSHAM, a township of America, in Montgomery county, Pennsylvania, containing 781 inhabitants.

HORSHAM Stone is a kind of thin broad slate, of a greyish colour; formerly much used, especially in Suffex, to heal or cover churches and chancels, great houses, &c. but on account of its weight very unfit for the purpose.

It is called Horsham stone, because chiefly brought from the town of Horsham in Suffex.

HORSEHEAD, in *Mining*, is a large hopper of wood, the small end of which is close joined to the air-pipes, or fangs, which are used in the lead mines of Derbyshire subject to foul air: the horsehead being turned towards the wind from time to time, a current of air is by that means directed down the fangs into the mine.

HORSEHEAD Cockle, or *Hippocephaloides*, in *Natural History*, depressed on one side and having the future or joint in the middle of the depressed part, is found in the limestone strata of Buckinghamshire. Jones's *Phys. Diss.* p. 404. Sometimes these are called horsehead muscles by the quarrymen and others.

HORSEHEAD Flints, in *Geology*, is a name pretty generally known in the chalk districts of England, and adopted by Mr. Smith and his pupils, for the large and irregular black flints with white surfaces, resembling in size, and somewhat in outward shape, the heads or skulls of horses, which being

curiously locked into each other, almost like the futures of a skull, form a stratum of flints of six to ten inches thick on the very top of the chalk series, and of which these horsehead flints are very characteristic. These flints are very commonly found in the alluvial clays of Woburn, in Bedfordshire, and other places still more distant from the chalk; and what among other circumstances prove these clays, &c. to have been moved in mass and not rolled along the surface by water, is, that the horsehead flints, though exceedingly brittle, often have large holes through them near their edges, so as to form handles to them, which are entire and unbroken, though a slight blow would detach them as the handle of an earthen pitcher or mug; by means of these holes they are very often suspended as jack-weights, and for other similar purposes, in the districts where they are found.

HORSELEY, JOHN, in *Biography*, a learned antiquarian, was a native of Northumberland, and was educated at the grammar school of Newcastle-upon-Tyne; he studied for some time at one of the northern universities, where he took a degree, and then settled at Morpeth as pastor to a congregation of Dissenters. He died in December 1731, at the age of 46. His great work did not appear till 1732, some time after his death. It is entitled "Britannia Romana," and contains a large account of all the vestiges of the connection of the Romans with this island. It consists (1) of an historical relation of all the Roman transactions in Britain; (2) of a collection of all the Roman inscriptions which have been discovered in Britain; (3) of the geography of the island, as laid down by Ptolemy, &c. Mr. Horseley was a considerable mathematician, and gave lectures in several branches of natural philosophy, both at Newcastle and Morpeth. *Gen. Biog.*

HORSENS, in *Geography*, a sea-port town of Denmark, situated on the Baltic, in Jutland, in the diocese of Aarhus; having a harbour with the water too shallow for admitting any vessels besides lighters. It is a place of considerable trade, with manufactures of flannel and other woollen stuffs, and contains two churches; 19 miles S.S.W. of Aarhus. N. lat. 55° 52'. E. long. 9° 52'.

HORSE-SHOE, in *Fortification*, is a work sometimes of a round, sometimes of an oval figure, inclosed with a parapet, raised in the ditch of a marshy place, or in low grounds; sometimes also to cover a gate; or to serve as a lodgment for soldiers, to prevent surprizes, or relieve an over-tedious defence.

HORSE-SHOE Head, a disease in infants, wherein the futures of the skull are too open, or too great a vacuity is left between them; so that the aperture shall not be totally closed up, or the cranium in that part not be so hard as the rest for some years after.

This openness is found to be increased upon the child's catching cold. When the disease continues long, it is reputed a sign of weakness and short life. In this case, it is usual to rub the head now and then with warm rum, or brandy, mixed with the white of an egg, and palm-oil.

Sometimes the disorder arises from a collection of waters in the head, called an hydrocephalus.

HORSE-SHOE, in *Mining*, is used by Mr. Kirwan (*Geol. Ess.* p. 337.), to express a depression of strata in a trough, such, probably, as the vale of the goyte between Derbyshire and Cheshire presents a striking instance of, according to Mr. Farey's Report, vol. i. p. 172; in this case the edges of the strata present the form of a lengthened horse-shoe dipping inwards; but a more remarkable and larger case of a horse-shoe, of the edges of strata, dipping outwards, is there described as presented by the edges of the first or millstone

millstone grit rock, from Little Eaton, near Derby, northward to the Woodlands of Hope, and then again southward near to Dilhorn in Staffordshire.

HORSE-SHOE, in *Rural Economy*, the well-known iron cover or defence which is fastened by means of nails upon the foot of the horse. It requires much care and attention to shoe horses in a safe and proper manner. See *SHOEING of Horses*.

HORSE-SHOE Point, in *Geography*, the most southerly point of land, near the E. end of the island of St. Christopher. N. lat. 17° 19'. W. long. 63° 32'.

HORSE-SHOE Vetch, in *Botany*. See *VETCH*.

HORSING-BLOCK, in *Engineering*, is a square frame of strong boards used by canal diggers, to elevate the ends of their wheeling-planks upon. See *Plate VII. of CANALS*, *fig. 49*.

HORSLEY, SAMUEL, in *Biography*, eldest of the three sons of the Rev. Mr. Horsley, formerly minister of St. Martin's in the Fields, was born about the year 1737. He was educated at Westminster school, whence he was removed to the university of Cambridge. Here he applied himself chiefly to the study of the mathematics, and not content with reading modern authors, he went back to the profoundest of the ancients, and made himself master of their works. When he had taken his degree of M. A. he went to Oxford as private tutor to the earl of Aylesford. He received at this university the degree of doctor of laws, and in 1769 he printed at the Clarendon press his edition of Apollonius, a work of great value, but exceedingly abstruse. Here he conceived the design of publishing a complete edition of the works of sir Isaac Newton, for which he began to collect the necessary materials. On leaving the university, Dr. Horsley came to London, where he was elected a fellow of the Royal Society, of which he was chosen secretary in 1773. He continued to serve that office with the greatest credit to himself, as well as benefit to the interests of science, till the resignation of the then president, sir John Pringle. Soon after his settling in London, he accepted of the office of chaplain to bishop Lowth, who presented him to the rectories of St. Mary Newington and Albury, both in the county of Surry, and in the course of the year he married Miss Botham. In 1776 he published proposals for his edition of Newton, which appeared in 1779 in five volumes, royal quarto. To this edition is prefixed a dedication to the king, written by the doctor in excellent Latin, which concludes with these words, "Te, Pater, tantum Doctrinarum Artiumque omnium Patronum, diu nobis sospitet, tueatur, custodiat. Tibi vero gratum precor sit Munus, quod reverentiæ et officii causâ Tibi dicat, qui in subditorum Tuorum fidelissimorum numero nomen suum profiteri gessit, unus idem ex humillimis." In 1778, when the controversy was on foot between Drs. Priestley, Price, and others, respecting materialism and philosophical necessity, Dr. Horsley preached a sermon on Good Friday at St. Paul's cathedral, which he afterwards published. In this discourse he endeavours to reconcile the doctrine of divine providence with the free agency of man, and combats the necessarian hypothesis with much ability. About this period he was appointed archdeacon of St. Alban's by his patron bishop Lowth, who, in 1782, presented him to the valuable living of South Weald, in Essex. From this time he entered avowedly and zealously into the controversy of the Unitarian doctrine with Dr. Priestley; the latter maintaining the simple humanity of Christ, in opposition to the creed of the established church, which admits of three Gods in every respect equal. The controversy was carried on with some bitterness till at length the archdeacon signified his intention to proceed no farther, saying, that it was an endless task to

contend upon an exhausted topic with one who was never disposed to cease disputing without having the last word. In 1789, Dr. Horsley collected the tracts which he had written on the occasion, and printed them in one volume octavo, with additions, particularly a sermon on the Incarnation, which had a material relation to the controversy in question. He had, in the year 1788, been raised to the bishopric of St. David's by the interest of lord Thurlow, who said, that those who defended the church and its doctrines were justly entitled to the honours and emoluments it had to confer. In the year 1790, when the Protestant Dissenters were struggling for relief from the test and corporation acts, the bishop published a pamphlet without his name, entitled "A Review of the Case of the Protestant Dissenters." This piece excited much attention, its style was nervous, but it was accused of illiberality and unfairness in the argument. It was a justification of high church principles, and brought forth a number of answers from persons in and out of the church. In the year 1794, bishop Horsley was translated to the see of Rochester, which he held with the deanery of Westminster. In 1796 he gave the public a very learned dissertation on "The Latin and Greek Prologues," which he dedicated to lord Thurlow; and in the year 1800 appeared in quarto his *Critical Disquisitions on the Eighteenth Chapter of Isaiah*, in a letter to lord King. Two years after this he published a new translation of the prophet Hosea, with notes critical and explanatory. He was in the same year translated to the rich see of St. Asaph; after this, the principal work that came from his lordship's pen was a critical essay "On Virgil's two Seasons of Honey, and his Season of sowing Wheat; with a New and Compendious Method of Investigating the Risings and Settings of the fixed Stars." Dr. Horsley died at Brighton on the 4th of October, 1806. No man of the age, perhaps, possessed more of what is generally understood by the idea of recondite learning. As a senator he was considered in the first class; there were few important discussions in the house of peers, especially when the topics referred to the hierarchical establishments of the country, to the French revolution, or to the slave trade, of which he was a systematic and eloquent opponent, in which his lordship did not participate. As an orator, his voice was deep, full-toned, and commanding; his enunciation distinct, and his delivery highly advantageous. As an author, besides the works already referred to, he published many smaller pieces, and also three volumes entitled "Elementary Treatises on the Fundamental Principles of Practical Mathematics for the Use of Students." As a bishop, an overseer of his diocese, his conduct was exemplary and very praise-worthy. In the see of St. David's, which was said to exhibit more of ignorance and poverty than that of any other in the kingdom, he carried through a regular system of reform. He regulated the condition of the clergy, and proceeded to a stricter course with respect to the candidates for holy orders, admitting none without personally examining them himself, and looking very narrowly into the titles which they produced. With all this vigilance, his lordship acted to them as a tender father, encouraging them to visit him during his stay in the country, which was usually for several months in the year, assisting them with advice, and ministering to their temporal necessities with a liberal hand. In his progress through the diocese, he frequently preached in the parish churches, and bestowed considerable largesses on the poor. "He was," says his biographer, "a blessing to his people, and they followed him with grateful hearts, and parted from him with infinite reluctance." Since the death of the bishop, two volumes of his sermons have been given to the world by his son,

son, who proposes, "if it please God to spare him a few years," to publish an uniform edition of all his father's works, with a biographical account of the author. The bishop has left behind him in MS., but ready for the press, a Translation of the Book of Psalms, with Notes; a Treatise on the Pentateuch, and on the Historical Books of the Old Testament; a Treatise on the Prophets; containing Notes on Isaiah, Jeremiah, Ezekiel, Joel, Amos, and Obadiah; which will be published, if the demand for them be such as to justify the undertaking. Monthly Magazine, vol. xxii. Preface to Sermons, by Samuel Horsley, LL.D. F.R.S F.A.S. late lord bishop of St. Asaph.

HORST, in *Geography*, a town of Westphalia, in the bishopric of Paderborn; 10 miles W.S.W. of Paderborn.—Also, a town of Germany, in the county of Marks; six miles N.N.W. of Hattingen.—Also, a town of the duchy of Holstein; four miles E. of Krempe.

HORSTIUS, JAMES, in *Biography*, a physician and botanist, was born at Torgau, in May 1537, and took the degree of M.D. at Francfort on the Oder in 1562. After having practised his profession for several years, he was appointed ordinary physician of the archduke of Austria in 1580; a post which he occupied about four years, and then was elected to a chair in the university of Helmstadt, in which he pronounced an inaugural oration, "De remoris discentium medicinam, et earum causas." He is said to have been dean of the faculty and vice-rector of that university in 1595, and to have died in May 1600; but others believe that his death occurred earlier. His works are as follows: "Precationes Medicorum Pix," Helmstadt, 1585, 12mo. "De vite vinifera ejusque partibus opusculum," ibid. 1587, 8vo. Marburg, 1630, with the following: "Herbarium Hortianum, seu, de selectis plantis et radicibus libri duo," Helmst. 1587. "De natura, differentiis, et causis eorum qui dormientes ambulant," Lipsiæ, 1593, 8vo. "De aureo dente maxillari pueri Silesii," Lips. 1595. "Epistolæ Philosophicæ et Medicinæ," ibid. 1596. "Disputationes Catholicæ de rebus secundum et præter naturam," Wittemberg, 1609. Eloy. Dict. Hist.

HORSTIUS, GREGORY, an able and learned physician, nephew of the preceding, was born at Torgau, where his father was one of the chief magistrates, in the year 1578. After having received the rudiments of his education in the schools of Torgau and Halberstadt, in which he far outstripped his equals in age, he went to the university of Wittemberg, and commenced the study of medicine; and afterwards travelled through the principal states of Germany, and into Switzerland, being introduced not only in the schools of science, but to men of literature in general. At Basil he received the degree of M.D. in March 1606; and on his return, in the same year, to his native place, he was immediately appointed to a medical professorship, in the university of Wittemberg, by the elector of Saxony. Two years afterwards he was promoted by the Landgrave of Hesse to a medical chair in the college at Giessen, and in 1609 was honoured with the title of Archiater of Hesse. At this time his professional character had risen in the public estimation, and he numbered among his patients the principal nobility of the district. In 1622, he received a public invitation from the magistracy of Ulm to settle there as physician to that city, and as president of the college. He fulfilled his duties in both these offices with great reputation; and his integrity and humanity, not less than his extensive erudition, and his successful practice, endeared him to his fellow-citizens, and claimed the respect and admiration of the surrounding states. He died in the month of August 1636, aged 58 years. During his residence at Giessen and at Ulm he employed his

leisure in active study, and he left a considerable number of works, of which it will be sufficient to enumerate the titles of the principal. The whole of his works were collected and published, under the title of "Opera Medica," in 1660, 3 vols. folio, at Nuremberg, by his youngest son, Gregory. Among his separate publications are "De Natura Humana Libri duo," Wittemberg, 1607. "Tractatus de Scorbuto, five, de magnis Hippocratis Lienibus, Pliniique Stomacæ et Scelotyrbæ," Giessen, 1609, 1615. "Centuria problematum Medicorum," 1610. "De morbis eorumque causis Liber," ibid. 1612, in 4to. "De tuenda sanitate Studiosorum et Literatorum Libri duo," ibid. 1615, in 8vo. "De natura Thermarum Dissertatio," 1618, in 4to. with some other tracts. He published also two volumes in quarto, at Ulm, 1625—28; "Observationum Medicarum singularium Libri quatuor," with a supplement, in 1631; and an abridgment of his uncle's "Herbarium Hortianum," 1630; and some smaller tracts, entitled "De natura amoris;" "De natura motus animalis et voluntarii;" "De causis similitudinis et dissimilitudinis in fœtu respectu parentum," &c. See Gr. Horstii Oratio funebris à J. D. Dieterich, subjoined to his works. Eloy. Dict. Hist.

HORSTIUS, JOHN-DANIEL, and GREGORY, two sons of the preceding, were also physicians and professors of medicine; the latter of whom died at the age of 35; but John-Daniel lived to his 65th year, and was the author of several works, chiefly anatomical, and of little value at present. He was concerned with his brother Gregory in editing the collection of his father's works; and likewise published an edition of the "Questiones Medico-legales" of Paul Zacchias, Francfort, 1666, in folio; and an edition of the "Opera Medica" of Riverius, at the same place, in 1674, in folio. Eloy.

HORSTMAR, in *Geography*, a town of Germany, in the bishopric of Munster; 15 miles N.W. of Munster. N. lat. 52° 9'. E. long. 7° 17'.

HORSZCZYK, a town of Poland, in the palatinate of Volhynia; 48 miles N. of Zytomiers.

HORTA, in *Mythology*, a goddess among the Romans, who presided over youth and excited them to virtue by her exhortations. Her temple is never shut, to admonish youth, so liable to be seduced, *cerea in vitrum flecti*, that they should be always disposed with particular vigilance over themselves to the practice of virtue.

HORTAGILERS, in the grand seignior's court, are upholsterers, or tapestry-hangers.

There is no city better or more orderly regulated than the grand seignior's camp; and to have a notion of the magnificence of that prince, he must be seen in that equipage; as he is much better lodged and accommodated there than at Constantinople, or any other city of his dominions.

He has always two tents or pavilions, and two sets of furniture entire; that, while he is in one, they may pitch or spread the other.

In order to this, he has constantly 400 hortagilers, or upholsterers in his retinue, who go a day's journey before him to fix on a proper place. They first prepare the sultan's tent, and then those of the officers of the Porte; and the beglerbeks, according to their rank.

HORTATOR, in the *Roman Navigation*, an officer whose business it was to give the word of command to the rowers, and to direct them when to stop, and when to ply their oars.

The Greeks gave the name of celeustes to this officer.

HORTE, JOHN, in *Biography*, a learned prelate, who was educated for a dissenting minister under Mr. Thomas Rowe, and had for a fellow-pupil the celebrated Dr. Isaac

Watts, with whom he kept up a correspondence till the doctor's death. He was settled in early life as a dissenting minister at Marshfield in Gloucestershire; while there, he conformed to the church, and in 1708 preached a visitation sermon at Aylesbury. He was afterwards taken to Ireland as chaplain to the lord-lieutenant, where he was made bishop of Leighlin and Ferns, from whence he was translated to Kilmore, and in 1742 to the archbishopric of Tuam. He died in 1751. His works are a volume of excellent sermons, printed at Dublin in 1738; and afterwards at London in 1757. Month. Mag.

HORTENSIUS, QUINTUS, a distinguished Roman orator, born about the year 115 B.C. He began to plead before he was nineteen years of age, and with so much talent, that the great Cicero said of him, "the genius of Hortensius, like the statue of Phidias, was at once beheld and approved." He afterwards entered the army and rose to the post of military tribune: he then passed through the usual course of civil offices to the consulship, which he served with Cæcilius Metellus B. C. 70. At that period he had acquired so much power and distinction by his eloquence, that when the lot of the Cretan war fell upon him, he resigned it to his colleague, preferring the distinction and celebrity of the forum and senate-house. He continued to plead till his death, which happened in his sixty-fourth year, or 51 B. C. We refer to the article **CATO** for a curious incident in the domestic life of Hortensius. As an orator he was elegantly splendid in his diction, apt in his composition, and copious in his matter. He embraced the whole subject in his memory, divided it acutely, and omitted nothing which the cause supplied, either for confirmation or refutation. He was aided with uncommon powers of memory, which enabled him to repeat a whole oration in the words which he had previously conceived, without committing it to writing, and to go through all the arguments of an opponent in their order. Though Hortensius died very rich, he lived in a very luxurious style: he possessed several magnificent country seats, furnished with parks, aviaries, fish-ponds, &c. in which he very much delighted. He was accustomed with his own hand to irrigate his fine plane-trees with wine, which may render credible the anecdote of his leaving to his heir 10,000 casks of that liquor. His daughter Hortensia inherited her father's eloquence, and when the Roman women were required to render on oath an account of their property, preparatory to a heavy tax, she pleaded the cause of her sex with such force, that the decree was annulled. Her harangue, which was delivered on this occasion, before the triumvirs, Antony, Octavius, and Lepidus, was extant in the time of Quintilian, who speaks of it with applause. Univer. Hist.

HORTENSIUS, LAMBERT, a man of letters, was born at Montfort, in the province of Utrecht, in the year 1518. He derived his name from the circumstance of his father being a gardener. He studied at the university of Louvain, and was afterwards a professor in the college of St. Jerome at Utrecht, and entered into priests' orders. In 1544 he was appointed prefect of the college of Naarden, which he held till his death, notwithstanding other invitations. When the town was sacked by the Spaniards in 1572, his house was pillaged, and he had the cruel misfortune of seeing his natural son massacred before his eyes. He himself would have shared the same fate, had he not been recognized and saved by one of his former pupils. He did not long survive this evil, but died in the course of a year or two. He was a general scholar, and published many works, chiefly in the Latin language. He translated four of the comedies of Aristophanes into Latin verse, and he wrote annotations on

the first six books of the *Æneid*, and on Lucan's *Pharfalia*; the latter he so highly prized, that it was the only thing he was solicitous to save at the pillage of his house. They were published after his death at Utrecht in 1578. His chief work, as an historian, was entitled "De Bello Germanico, a Carolo V. Cæs. gesto lib. vii."

HORTENSIUS, MARTIN, an astronomer, was born at Delft in 1605, and died in the flower of his age, in 1639. He is known by a dissertation "De Mercurio sub sole viso, a Venere invisâ;" also two discourses "De utilitate et dignitate Matheseos, et de Oculo ejusque Præstantia."

HORTICULTURE, compounded of *hortus*, garden; and *colo*, I till, dress, &c. the art of gardening. See **GARDENING**.

HORTOBAGY, in *Geography*, a town of Hungary, on a river of the same name, which runs into the Theysse; 17 miles S.S.W. of Nanas.

HORTON, a township of Nova Scotia, in King's county; traversed by a river, which supplies the inhabitants with excellent salmon.

HORTULANUS, in *Ornithology*, the name of a species of the emberiza, in the Linnæan system, though some writers have made this a distinct genus.

HORTUS, a name used by some authors for the female genital parts of animals.

HORTUS Siccus. See **HERBAL** and **HERBARIUM**.

HORVATZ, in *Geography*, a town of Croatia; 18 miles S.W. of Varasdin.

HORVOS, an island in the gulf of Mexico, 25 miles long and three wide, separated by a narrow channel from the N. coast of Yucatan. N. lat. 21° 10'. W. long. 70° 5'.

HORWAL, a town of Lithuania, in the palatinate of Minsk; 28 miles S. of Rohaczow.

HORZITZ, a town of Bohemia, in the circle of Czaflau; 20 miles S.S.W. of Czaflau.—Also, a town of Bohemia, in the circle of Konigingratz. N. lat. 50° 18'. E. long. 15° 20'.

HOSANCOCK CREEK, a river of Pennsylvania, which runs into the Schuylkill. N. lat. 40° 8'. W. long. 75° 30'.

HOSANNA, in the *Hebrew Ceremonies*, a prayer which they rehearfed on the several days of the feast of tabernacles.

It was thus called, because there was frequent repetition therein of the word *הושיענו*, *serve nunc*, or *serve precor*, i. e. save us now; or, save us, we pray.

There are divers of these hosannas. The Jews call them *hoschannoth*; i. e. the hosannas. Some are rehearfed on the first day, others on the second, &c. which they call *hosanna* of the first day, *hosanna* of the second day, &c.

HOSANNA Rabba, or *Grand Hosanna*, is a name they give to their feast of tabernacles, which lasts eight days; because, during the course thereof, they are frequently calling for the assistance of God, the forgiveness of their sins, and his blessing on the new year; and to that purpose they make great use of the *hoschannoth*, or prayers above mentioned.

The Jews also apply the term *hosanna rabba*, in a more peculiar manner, to the seventh day of the feast of tabernacles; because they apply themselves more immediately on that day to invoke the divine blessing, &c.

HOSANPORAH, in *Geography*, a town of Hindoostan, in Bahar; 25 miles N.N.W. of Chuprah. N. lat. 26° 4'. E. long. 84° 30'.

HOSE, from the Saxon *hosa*, a stocking. See **STOCKING**.

HOSE, a term frequently made use of to signify the sheath from which the shoot of grain proceeds.

HOSE in *Hose*, among *Botanists*, signifies one long husk of a flower within another; as in the polyanthus. See **PRIMROSE**.

HOSE-Husk, a long round husk; as in pinks, july-flowers, &c.

HOSEA, in *Scripture History*, a canonical book of the Old Testament, so called from the prophet of that name, its author; the first in order of the lesser prophets, and perhaps, Jonah excepted, the most ancient of them all. He lived in the kingdom of Samaria, and delivered his prophecies under the reign of Jeroboam II. and his successors, kings of Israel; and under the reigns of Uzziah, Jotham, Ahaz, and Hezekiah, kings of Judah. His principal design is to publish the gross idolatry of the people of Judah and Israel, to denounce the divine vengeance against them, and to foretel the captivity in Assyria. His style, says bishop Lowth, exhibits the appearance of very remote antiquity; it is pointed, energetic, and concise. It bears a distinguished mark of poetical composition, in that pristine brevity and condensation, which are observable in the sentences, and which later writers have in some measure neglected. This peculiarity has not escaped the observation of Jerom. "He is altogether," says he, speaking of this prophet, "laconic and sententious." But this very circumstance, which was anciently supposed, without doubt, to impart uncommon force and elegance, in the present ruinous state of Hebrew literature, is productive of so much obscurity, that although the general subject of this writer be sufficiently obvious, he is the most difficult and perplexed of all the prophets. Besides, the duration of his ministry must include a very considerable space of time; but we have now only a small volume of his remaining, which, it seems, contains his principal prophecies: and these are extant in a continued series, with no marks of distinction as to the times in which they were published, or the subjects of which they treat. We need not therefore be surpris'd, if, in perusing the prophecies of Hosea, we sometimes find ourselves in a similar predicament with those who consulted the scattered leaves of the Sibyl. Lowth's Lect. on the sacred poetry of the Hebrews, by Gregory, vol. ii. See **HEBREW Poetry**.

HOSEPOUR, in *Geography*, a town of Hindoostan, in Bahar; 50 miles N.W. of Chuprah. N. lat. 26° 25'. E. long. 84° 18'.

HOSHEARPORUM, a town of Hindoostan, in Lahore; 40 miles E. of Jallindar.

HOSIUS, STANISLAUS, *Cardinal*, in *Biography*, one of the most illustrious Catholic prelates in the 16th century, was a native of Cracow, and born in the year 1504. He received his early education at the place of his birth, and was sent to pursue his academical studies at the university of Padua. After continuing there some time, he removed to Bologna, where he was admitted to the degree of doctor of laws. The superiority of his talents brought him to the notice of the king, who made him his secretary, and afterwards employed him in the chancellery, in the management of the most important state affairs. Shortly after this he was nominated to the bishopric of Culm, from whence he was translated to the see of Walmia. He was now employed on missions of importance by the pope Pius IV. to the emperor Ferdinand, and to the king of Bohemia, to negotiate for the continuation of the council of Trent. Having proved successful in his negotiations, Pius sent him, in 1561, a cardinal's hat, which he declined, till the pope obliged him to accept it. He was a learned and zealous champion for the Roman church. His works make two volumes folio: they have gone through many impressions. He wrote elegantly, and was an able opponent of the Protestants. He died in 1579. The best edition of his works is that of 1584. Univer. Hist.

HOSLUNDIA, in *Botany*, so named by Mr. Peter Thonning, in commemoration of Olaus Hoslund Smith.

These two young Danes undertook an expedition to the coast of Guinea, in search of natural productions, where unfortunately the latter, a most ardent and intelligent botanist, from whose researches much was expected, met with a premature death.—Vahl. Enum. v. 1. 212.—Class and order, *Diandria Monogynia*. Nat. Ord. *Verticillate*, Linn. *Labiata*, Juss.

Gen. Ch. *Cal.* Perianth of one leaf, inferior, tubular, five-toothed, striated. *Cor.* ringent, almost twice as long as the calyx; throat compressed: upper lip of the limb erect, ovate, gibbous; lower one gaping, trifid, recurved. *Stam.* Filaments four, growing to the tube; the two barren one very short; anthers kidney-shaped. *Pist.* Germen superior, four-cleft; style thread-shaped, the length of the perfect stamens; stigma bifid. *Peric.* Berry spurious, formed out of the calyx; roundish and slightly ten-angled, umbilicated by the teeth of the calyx, hollow within. *Seeds* four, ovate, in the bottom of the calyx.

Ess. Ch. Calyx tubular, five-toothed. Corolla ringent, its upper lip concave. Stamens four, two of which are barren. Seeds four, within the pulpy calyx.

1. *H. opposita*. Vahl. Enum. n. 1.—"Leaves opposite, oblong-ovate."—Native of bushy places in Guinea. This shrub is about six feet high, having numerous opposite branches crossing each other, with a hairy line between the insertion of the leaves; these are two inches or more in length, ferrated towards the end, entire at the base, aromatic. *Flowers* white. *Berry* the size of a currant, orange-colored, downy.

2. *H. verticillata*. Vahl. Enum. n. 2.—"Leaves lanceolate, ternate."—Native of Senegal, and first discovered by M. Dupuis, formerly superintendent of the garden of the Thuilleries.—*Stem* shrubby, branched. *Branches* square, striated, slightly downy, hoary at the top. *Leaves* an inch and half long, ferrated, but entire both at the top and base, interspersed with resinous, bright spots, which are discernible by the help of a lens. The parts of fructification in this species are very similar to those of the last. *Panicle* terminal. *Bractees* minute, awl-shaped. *Flowers* small, clothed outwardly with whitish hairs.

HOSPINIAN, RODOLPHUS, in *Biography*, a learned Swiss divine, was born at Altdorf, near Zurich, in 1547. From a very early period he was distinguished for excellent talents, which his friends encouraged and cultivated, by giving him a good education. In 1568 he was admitted into the ministry, the duties of which he performed with much diligence and assiduity at a country church a few miles from Zurich. After this he had the superintendance first of the abbey-school at Zurich, and then of the Caroline school. Amidst the various occupations of his life he was enabled to compose some valuable works, of which the principal are; "De Templis, i. e. de origine, usu, et abusu Templorum:" "De monachis:" "De felis Judæorum et Ethnicorum:" "Festa Christianorum:" "Historia Sacramentaria:" "Historia Jesuitica." He was nearly a year deprived of his sight, notwithstanding which he continued to preach as usual, and in 1613 he submitted to the operation of couching, which succeeded to his wishes. In 1623 his faculties became so much impaired, that he was reduced to a second childhood, in which he continued till his death in 1626. His works, which are enumerated by Bayle, were collected and printed in seven volumes folio.

HOSPIDALETTO, in *Geography*, a town of the bishopric of Trent; 35 miles N.W. of Trent.

HOSPITA, in *Mythology*, a surname of Venus, under which appellation she was worshipped, and had a temple at Memphis, in Egypt.

HOSPITAL, MICHAEL DE L', in *Biography*, chancellor of France, was born at Auvergne in 1505. He was educated for the law in the most celebrated universities of France and Italy, and at the same time he greatly distinguished himself by his proficiency in polite literature. He was in early life made one of the auditors of the rota at Rome, the duties of which he quitted, to follow the law court at Paris. Here he passed through various high offices, continually rising in esteem for his ability and integrity. In 1560, he was elevated to the dignity of chancellor of France. At this period the kingdom was divided between the factions of contending interests. L'Hospital was a true patriot, and preferred the honour of the crown and country, to that of any interest supported by the great. To carry his point he was sometimes obliged to give way, and even to consent to a severe edict against the Protestants; this he did with much regret, and he never ceased to advocate the cause of toleration. In 1562, he was the champion of the decree which allowed freedom of worship to the Protestants. He was more than once accused of being himself a Protestant, and was excluded from those councils in which the bloody massacre was planned. The papal legate would gladly have removed him from office, which he was unable to do, till at length the whole influence of the court was bent on exterminating by violence the reformed religion. He now resigned his seals, and retired into the country to spend the remainder of his days, with his books and his friends, and in this retreat he declared that he enjoyed more happiness than he had ever done in public life. The felicity of privacy was cruelly interrupted by the detestable massacre of St. Bartholomew in 1572. It was imagined that he might, on account of his great integrity, be included among the number of victims, and when a troop of horse approached his house, he was asked if he would defend himself with fire-arms; "By no means," said he, "and if the wicket is not wide enough to admit the assassins, set open the great gates." The men, who were sent on the bloody errand, were overtaken by a message from the king, announcing that L'Hospital was not among the proscribed, and was told that the authors of the deed had pardoned him his constant opposition to their plans; "I did not indeed know," said the excellent man, "that I had merited either death or pardon." He survived this shock but a short time, dying in the year 1573, in the sixty-eighth year of his age. He was author of "Latin poems," which have gone through many editions, and which are grave, but easy and energetic; also of "Harangues before the States of Orleans;" "Memoirs containing treaties of Peace, &c.;" "A Discourse in favour of Peace," and other tracts. His eulogy, in better times, was made a prize subject by the French academy in 1777, and his statue was erected in marble by Lewis XVI., but his noble and manly conduct has erected to his memory a statue more durable than marble. "No one," says his biographer, "was more determined in resistance to injustice, and if ever he acceded to measures which he disapproved, it was only to prevent worse." Bayle. Moreri.

HOSPITAL, WILLIAM-FRANCIS-ANTHONY, marquis de St. Merne, a celebrated mathematician, of the same family as the preceding, was born in 1661. His genius for mathematical pursuits discovered itself at a very early period; for, being present one day at the duke de Rohan's, where some able geometers were speaking of a problem of M. Pascal's, which appeared very difficult, he ventured to say that he believed he could solve it. They smiled at the assertion, and probably regarded the supposed forwardness of a youth of fifteen with contempt; however, in a few days, he sent them a very neat solution, which gave them a very different idea of his talents.

He entered the army, and rose to the post of captain of horse, but still retained his passion for mathematics, which he studied at the hours of leisure from military duty, though he was forced to do it in concealment, as an attachment to the sciences was thought unbecoming the dignity of a soldier. Disgusted with this idea he quitted the army, and devoted his whole time to study. When he was little more than thirty years of age, he distinguished himself by the solution of problems drawn from the sublimest geometry, which had been proposed to the mathematical world by John Bernoulli. In the year 1693 he was admitted an honorary member of the Academy of Sciences at Paris, and from this period the philosophical transactions of France, and those of other countries, were enriched by his papers. He published a work on Sir Isaac Newton's fluxions, entitled "Analyse des infinimens petits," being the first Frenchman that ever wrote on this subject. He died at the age of 43, in the year 1704, and after his death was published another mathematical work which he had left in a finished state, and which included "Les Sections Coniques, les Lieux Geometriques, la Construction des Equations, et une Theorie des Courbes Mechaniques."

HOSPITAL, popularly *Spital*, a place or building erected, endowed, or supported by charitable contributions, for the reception and relief of the poor, aged, infirm, sick, and otherwise helpless.

The word is formed of the Latin *hospes*, *host* or *stranger*. In the first ages of the church, the bishop had immediate charge of all the poor, both sound and diseased; also of widows, orphans, strangers, &c. When the churches came to have fixed revenues allotted them, it was decreed, that, at least, one-fourth part thereof should go to the relief of the poor; and to provide for them the more commodiously, divers houses of charity were built, which are since denominated hospitals.

They were governed wholly by the priests and deacons, under the inspection of the bishop.

In course of time, separate revenues were assigned for the hospitals; and particular persons, out of motives of piety and charity, gave lands and money for erecting of hospitals.

When the church-discipline began to relax, the priests, who, till then, had been the administrators of hospitals, converted them into a sort of benefices, which they held at pleasure, without giving an account thereof to any body, reserving the greatest part of the income to their own use; so that the intentions of the founders were frustrated. To remove this abuse, the council of Vienne expressly prohibited the giving any hospital to secular priests in the way of benefice; and directed the administration thereof to be given to sufficient and responsible laymen, who should take an oath, like that of tutors, for the faithful discharge thereof; and be accountable to the ordinaries. This decree was executed, and confirmed by the council of Trent.

In England, hospitals, founded for the mere relief of the indigent and necessitous, are peculiarly called *alms-houses*; the name hospital being reserved to those destined for the sick, aged, young, &c. See CORPORATION.

Any person seized of an estate in fee simple, may, by deed inrolled in chancery, erect and found an hospital for the sustenance and relief of the poor, to continue for ever; and place such heads, &c. therein as he shall think fit; and such hospital shall be incorporated, and subject to such visitors, &c. as the founder shall nominate. Also such corporations shall have power to take and purchase lands not exceeding two hundred pounds per annum, so as the same be not holden of the king, &c. and to make leases for twenty-one years,

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years, reserving the accustomed yearly rent; but no hospital is to be erected, unless upon the foundation it be endowed with lands or hereditaments of the clear yearly value of ten pounds per annum. Stat. 39 Eliz. cap. 5.

This act was made perpetual by the 21 Jac. cap. 1. It is understood, in consequence of this statute, that if the lands given to an hospital be afterwards improved, they shall be enjoyed by the hospital, though they should be above the yearly value of two hundred pounds. And goods and chattels, real or personal, may be taken of what value soever. (2 Inst. 722.) But by 9 Geo. II. cap. 39. no lands nor money shall be conveyed or settled in trust, for the benefit of any charitable foundations, unless the appointment of lands, money, or personal estate, stocks in the public funds excepted, be made by deed indented, sealed, and delivered in the presence of two witnesses, at least twelve calendar months before the death of the donor, and be enrolled in chancery within six calendar months next after the execution thereof; and unless such stock in the public funds be transferred in the public books usually kept for the transfer of stocks, at least six calendar months before the death of the donor, and take effect immediately and without the power of revocation. By 43 Eliz. cap. 4. the lord chancellor may issue commissions to take account of misapplication of lands and goods, given to hospitals, which have no special visitors or governors. By 31 Eliz. cap. 6. the place of any person, taking reward for nominating to an hospital, shall be void. By the aforefaid stat. of the 39 Eliz. cap. 5. it is provided, that all leases of estates for a term exceeding the number of twenty-one years, in possession, and on which the accustomed yearly rent or more, by the greater part of twenty-one years next before the taking of such lease shall not be reserved and yearly payable, shall be void. By 43 Eliz. cap. 2. all lands within the parish are to be assessed to the poor's rate, and it has been determined by courts of law, particularly by Holt, in 1 Anne, that hospital lands are chargeable to the poor as well as others. (2 Salk. 527.) In the case of St. Luke's hospital, by 1 Geo. III. it was determined in general, that no hospital is chargeable to the parish rates, with respect to the site thereof, except those parts of it which are inhabited by the officers, whose apartments are to be rated as single tenements, of which the said officers are the occupiers. By the annual acts for the land-tax, it is provided, that the same shall not extend to charge any hospital, for or in respect to the site of such hospital, or any of the buildings within the walls or limits thereof; or to charge any of the houses or lands, which on or before Mar. 25, 1693, did belong to Christ's hospital, St. Bartholomew, Bridewell, St. Thomas, and Bethlehem hospital; or to charge any other hospitals or alms-houses for or in respect of any rents or revenues, which, on or before March 25, 1693, were payable to the said hospitals or alms-houses, for the immediate relief of the poor. But all such lands &c. belonging to any hospital or alms-house, or settled to any charitable or pious use, as were assessed in the fourth year of W. and M. shall be liable to be charged. The principal English hospitals are the following:

HOSPITAL, Aske's or Haberdashers, is an hospital situated at Hoxton, and erected in 1692, by the company of Haberdashers, in pursuance of the will of Robert Aske, esq. who left for building and endowing it 30,000*l.* This hospital is established for the maintenance of twenty poor haberdashers, and the support and education of twenty boys. Each of the pensioners in this hospital has convenient apartments, is provided with proper diet and firing, three pounds yearly in money, and a gown every second year. There are also

established salaries, &c. for chaplain, clerk, butler, porter, and other domestics.

HOSPITAL, St. Bartholomew's, is situated on the fourth-east side of Smithfield, and incorporated in the last year of the reign of Henry VIII. by the name of the hospital of the mayor, commonalty, and citizens of London, governors for the poor, called Little St. Bartholomew's, near West-Smithfield. This hospital formerly belonged to the priory of St. Bartholomew, in Smithfield, founded by one Rahere, about the year 1102.

At the dissolution of the monasteries, Henry VIII. left five hundred marks a-year to it, on condition that the city should add five hundred marks per annum for the relief of sick and poor people; but it was more largely endowed, for the use of sick and lame persons only, by Edward VI. by the munificence of the city and private benefactors. This hospital, having escaped the dreadful fire in 1666, was repaired and beautified by the governors in the year 1691. But the buildings became by length of time so ruinous and dangerous, that a subscription was entered into in 1729, for defraying the expence of rebuilding it, on a plan comprehending four detached piles of building to be joined by stone gate-ways, about a court or area. Four piles have been erected and finished; one of these piles contains a large hall for the resort of the governors at general courts, a counting-house for the committees, and other necessary offices; the other three piles contain wards for the reception of the patients, &c.

It is governed by a president, treasurer, &c. It is furnished with three physicians, and three master surgeons, besides as many assistant surgeons, an apothecary, and vicar. The officers of this hospital, are a cook, steward, renter, matron, and porter. This hospital, since its enlargement, is capable of accommodating four hundred and twenty patients. It extends relief also to a great number of out-patients. By the report of 1811, it appears that this hospital administered relief to 9746 patients in the course of the preceding year.

HOSPITAL, Bethlehem, or Bedlam, was originally a priory, founded by Simon Fitzmary, sheriff of London, in the year 1247, the 31st of Henry III.; but in the year 1547, king Henry VIII. gave this hospital to the city, who employed it for the accommodation of lunatics. The present stately fabric was erected in the city of London in the year 1676, at a charge of about seventeen thousand pounds. It was in length five hundred and forty feet, and forty feet broad, and contained a great number of cells, or rooms for the accommodation of the unfortunate, who are maintained without any expence to their friends; except an allowance for bedding. At each end of this stately edifice were erected, in 1733, by the charitable contributions of the citizens, two wings, or spacious buildings, for the reception of poor incurable lunatics. But it became necessary very lately to take down the east wing, on account of its decay. The report of the number of incurables was, a short time since, 82, being 37 men, and 45 women; who, by an order of court in July 1807, pay each 7*s.* per week if sent by parishes, but if sent by friends, 5*s.* The number of patients capable of relief amount upon an average to 170; and it has been found, at a mean computation, that nearly two out of three are restored to mental sanity. Before this magnificent structure there was a pleasant garden, inclosed by a stately wall about seven hundred feet in length. This hospital, being united by the charter of Edward VI. to that of Bridewell, has the same president, governors, who consist of members of the corporation, and of others, who are made governors by

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by benefactions of 50*l.* each, treasurer, clerk, auditor, physician, surgeon, and apothecary; but each hospital has a steward, and inferior officers peculiar to itself. The management is entrusted to a committee of 42 governors, seven of whom, with the treasurer, physician, and other officers, attend every Saturday in monthly rotation for the admission of patients, and other concerns of the hospital. The income of this hospital, appropriated to curables and incurables, and arising from rents, &c. and dividends on government securities, amounts to 7412*l.* 16*s.* 10*d.* The number of patients in this hospital, on the 31st of December 1807, was 126, and of those admitted during the year 1808, was 85, the total 211; the number of those cured and discharged 52, of buried 12, and of patients in the hospital December 31st, 1808, 147. By the report of 1811, the number of cured and discharged in the preceding year was 81, of buried 7, and of patients remaining 147.

The decay of the buildings of this hospital has made it necessary to rebuild it; and the committee, upon mature deliberation, have determined to remove it to another situation. Accordingly, as the leases of the Bridge-house estates in St. George's fields and Lambeth-marsh fell in at Lady-day 1810, the corporation have agreed with the commissioners of those estates for a ground plot of nearly twelve acres, fronting the road leading from Newington to Westminster-bridge, part of which was formerly the site of the house and gardens called the Dog and Duck; and on this spot it is proposed to erect a new edifice, capable of accommodating a greater number of patients than the present building can contain, and suitable to the munificence of the city of London. The statues of the two lunatics upon the pillars of the front gates of Old Bethlehem, which have been very much admired as monuments of art, were the work of Caius Gabriel Cibber, a native of Holstein, who came into England at some period previous to the restoration of Charles II. to follow his profession as a statuary.

HOSPITAL, *Bridewell*, is situated in Bridge-street, Blackfriars, on a spot near the ancient river Fleet, where stood the palace in which king John held his court, and within the walls of which was a well dedicated to St. Bridget, or Bride, whence the palace, &c. derived its appellation. This palace had been variously occupied; it was the residence of cardinal Wolsey during his prosperity, and after his fall of Henry VIII. particularly in 1520. After this time it was suffered to decay, and bishop Ridley begged it of Edward VI., to be converted to some charitable use. The citizens of London addressed the king's council in 1552; and Edward VI., in the same year, by a deed between himself and the mayor, commonalty, and citizens of London, granted to them all the manor-house and parish of Bridewell, with the appurtenances in the parish of St. Bridget, Fleet-street, with other lands, and licence to purchase four thousand mark lands, besides the lands given them by his majesty in London and elsewhere, and to purchase so much land, and that the lands so given them should be discharged of all tithes and first-fruits. And out of the suppressed hospital of the Savoy, he gave a great part (whose revenue was 700 mark land), besides bedding and furniture for the maintenance and employment of vagrants and idle persons, and of poor boys; uniting it with Bethlehem hospital. The king was so desirous that this grant should be carried into effect, that he directed by his will that it should be performed, and died soon after, on July 6, 1553. In 1557 the citizens of London prescribed certain rules for the government of this hospital, and for the power of its governors and officers. (See BRIDEWELL.) By an act passed in 1782, the union of Bridewell and Bethlehem was recognized, and the present me-

thod of appointing corporation governors was established or confirmed. The revenues of Bridewell hospital, at that time, May 1792, amounted to 4505*l.* 13*s.* 1*d.* and of Bethlehem hospital, to 7881*l.* 19*s.* 10*d.*, of which 2284*l.* 17*s.* belonged to the fund for incurables.

The front of this building, situated on the west side of Bridge-street, Blackfriars, has not for many years exhibited any part of the original palace. At present there is one vast quadrangle. The chapel is a plain edifice; the prison's gloomy front occupies the fourth-west corner; and the hall the greater part of the fourth side. The ceiling of this large room, thirty-nine paces in length and fifteen in breadth, is horizontal, without any other ornament besides two flowers, where the lustres are suspended. At the west end, and over the chimney, is a large picture by Holbein, representing Edward VI. in the act of delivering the charter for this hospital to the mayor and citizens of London. There are some other pictures which we have not room to particularize. It appears (see BRIDEWELL), that this institution is of a mixed nature, partaking of the hospital, the school of industry, the work-house, and the prison for correction. The school is conducted by six masters of different arts, who are elected by the governors, *viz.* a printer, book-binder, ferris, orris, and galloon weavers, and a silver-smith, to whom twenty-eight youths are bound from Christ's hospital, as apprentices, who are clothed at the charge of Bridewell hospital, but maintained by their masters, who receive the whole profit of their work. They were formerly habited in a blue jacket and trowsers, with a white hat; but this singularity has been of late judiciously abolished in favour of the common clothing of other persons: when they have served their apprenticeship of seven years, they receive their freedom, and a gift of ten pounds towards establishing themselves in business. The workhouse, and the prison for vagrants, idle and disorderly persons of both sexes, are separated into solitary rooms, where employments are provided, which it is a part of their punishment to execute, and which are exercised by their task-masters, and sometimes accompanied with coercion. Although Bethlehem and Bridewell hospitals are united, and they are governed by the same members, distinct accounts of their respective revenues are kept. The accounts exhibited at Christmas 1808, stated a net income of 6201*l.* 6*s.* 11*d.*, arising from net rents of the estates and the dividends on 3000*l.* 3 per cents., to which legacies and donations are to be subjoined. The expences attending the arts-masters and apprentices amounted to 645*l.* 4*s.* 6*d.*; the charges attending the vagrants to 706*l.* 19*s.*, and the salaries and gratuities to the several officers and servants, &c. amounted to 1586*l.* 14*s.* 2*d.*, making a total of 2938*l.* 17*s.* 8*d.*, which exceeded the receipt by 3262*l.* 7*s.* 3*d.* The qualification of a governor is a donation of 50*l.* paid upon election, which is in the general court. This hospital is under the immediate management of a president, treasurer, chaplain, physician, clerk, steward, and other inferior officers. The number of persons received into this hospital, during the year 1809, amounted to 1261, including 279 vagrants or disorderly persons, committed by the lord mayor and aldermen, and ordered for hard labour or correction, 917 persons to be forwarded to their respective parishes, and 35 apprentices.

HOSPITAL, *Charter-House*, or *Sutton's*. See CHAR-TRUSE.

HOSPITAL, *Christ's*, popularly called the *Blue-coat Hospital*, was anciently a monastery of Grey friars, founded by Rahere, the first prior thereof in the time of Henry I., or, as others say, by John Ewin, citizen and mercer. It was dissolved by Henry VIII. and granted by him to the city

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city in 1547, and the grant to the citizens was confirmed in 1552, by charter of Edward VI., who converted it into an hospital for poor children; who are supplied with all necessaries and conveniences, clothed, dieted, and taught.

Since its first endowment, it has received abundance of new donations. Besides the numerous benefactions of private persons, the city allows this house the benefit of superintending and licensing the carts of London; and a duty of about $\frac{1}{3}$ ths upon every cloth brought to Blackwell-hall, where clerks are kept to receive it. The citizens, by king Edward's charter, are incorporated governors of his several foundations in the city and liberties of London by the name of the mayor, commonalty, and citizens of the city of London, governors of the possessions, revenues, and goods of the hospitals of Edward VI., &c. A great part of it was burnt down by the great fire in 1666; but is again rebuilt by the care of the governors; though not without incurring a great debt, and anticipating the revenues of the hospital; all which incumbrances have been long since discharged.

Formerly, a thousand poor children, most of them orphans, were maintained on this foundation; eight or nine score yearly put out apprentices, and the girls to service; but the number has fluctuated from various causes.

Besides the children that are maintained within the walls of this hospital, there is a considerable number of the least and youngest provided for in the country, *viz.* at Hertford, in Hertfordshire, where there are a school-house, a master's house, and several houses for nurses employed in taking care of the children. The number of children under the care and charge of this hospital, in 1810-11, was one thousand two hundred and thirty-two; one hundred and seventy-two were put out apprentices, and eight buried.

Here were two mathematical schools; the first founded by king Charles II. Aug. 19th, 1674, but they are now united. Youths are there taught several parts of practical mathematics, particularly navigation, to fit them for apprentices to masters of ships; there is also a grammar-school (whence the most improved boys are yearly sent to the university), a writing-school, and a school for the girls, where they learn to read, to sew, and to mark.

In the mathematical school, called the new royal foundation of king Charles II., forty boys are qualified for the sea; who wear appropriate badges, and whose classes are examined by the elder brethren of the Trinity-house, ten of whom are yearly appointed to ship-masters, and ten others received into their places; who have attained a competency in writing and Latin; and the governors appoint forty more. All the other scholars are bound apprentices at fourteen or fifteen years of age for seven years; or, if properly qualified, are sent to either university of Oxford or Cambridge, where they are maintained for a like term: one scholar is sent every year, except on the return of every seventh year, when two scholars are sent; the scholars have their choice of the college to which they are to go, but Pembroke-hall, in Cambridge, is generally preferred, as most advantageous to them; and one scholar is also sent to Oxford in eight years. The allowance paid to each of them during the first seven years is 60*l.* per annum. On St. Matthew's day, 21st of September, yearly, the lord mayor in state, with the president, aldermen, sheriffs, treasurer, and governors, and other company, assemble in the great hall after divine service at Christ's church, to hear orations from the elder scholars; one of whom speaks in Latin, and the other in English, the latter of these having spoken in Latin in the preceding year, is now elected off to college, and leaves the school in about a month afterwards;

on this occasion a glove is handed about among the audience for their contribution.

The masters of these schools are, a grammar master, who is assisted by an under master, a mathematical master, and two writing masters, who have 100*l.* per annum each, for their salaries, besides houses. There are also two school-mistresses. The grammar master hath an addition of 20*l.* yearly for catechising the boys, and his usher is allowed 50*l.* a year. There are likewise a drawing master and music master.

The children are admitted by an order of committee and treasurer, signed by the chief clerk. Their education consists of arithmetic, writing, reading, navigation, Latin, and Greek. Their dress is the same as that used in the time of Edward VI., being a blue cloth coat or tunic, reaching to the feet, with yellow breeches and stockings, and a round bonnet or cap too small to cover the head, and it is therefore generally taken in the hand. An examination of the children in the grammar school takes place in the months of March and September by an experienced person, appointed by the governors. The upper master examines the under master's highest form twice in the year, and takes such as he judges ready for his instruction. The holidays allowed are eleven days at Easter, including Sundays; one week at Whitsuntide; and at Bartholomew-tide three weeks; and at Christmas 15 days, and the usual Saint's days, &c. The catechiser teaches the children the fundamental points of religion three times in each week, and at other times visits the wards for the instruction of the inmates. The English reading-master is authorized to assemble all the children belonging to any two wards in the grammar school, from 11 to 12, three times in a week, in order to obtain a knowledge of their progress. Thus every child in the 12 wards is examined once in 14 days. He may substitute for this purpose under his own observation any boy intended for the university, and he appoints a marker in the several wards, who is to observe and correct mistakes in the reading of prayers, &c. and he reads himself occasionally for example. If the marker's diligence is approved, he receives a silver medal of the founder. The two writing masters have two ushers. An exhibition of drawing and specimens of writing takes place in the hall the 31st of March and 30th of September; and the writing is said to be of such superlative excellence, that the world would procure the writer a situation in the most fatiduous merchant's counting-house.

Among the peculiarities of Christ's hospital, a fight is exhibited from Christmas to Easter every year, which no other institution, lay, civil, ecclesiastical, or eleemosynary, has ever equalled in their grand ceremonies, or which is more calculated to impress the heart of a spectator with the liveliest sentiments of sympathetic pleasure; we mean the supper of all the children on Sunday evenings at six o'clock, to which strangers are admitted by tickets.

The great hall, which was rebuilt after the fire of London, contains several tables, which are covered with table-cloths, wooden platters, and buckets of beer, with bread and cheese. The treasurer and governors take their seats at the upper end, at a semi-circular table; the boys, attended by the nurses of their several wards, enter in order, and arrange themselves on each side of the hall; strangers are then admitted, who go along the centre of the hall to the upper end; the masters of the school, the steward, and the matron, take their places there also; and the nurses preside at each table, on which a great number of candles are placed, and these, with many lamps and a large lustre, illuminate the room. The ceremony then commences by the steward striking upon

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one of the tables three strokes with a mallet, which produces a profound silence; one of the boys intended for the church, having ascended a pulpit on one side of the hall, then reads the second lesson for the afternoon service of the day, and an evening prayer composed for the occasion, at the close of which the response of "Amen," from about eight hundred youthful voices, has a very interesting effect; a psalm or hymn is next sung by the whole assembly, accompanied by the organ: the same youth then delivers the grace, after which the boys take their seats, and the supper proceeds. When the repast is concluded, the steward again strikes the table as before, and the boys instantly arrange themselves again on each side of the hall, and a grace is said from the pulpit: an anthem is then sung, after which the boys collect all the fragments into small baskets; and each ward, preceded by its nurse with lighted candles, marches in order past the upper table, where they bow to the governors, and file off to an adjoining school-room, the doors of which are thrown open to receive them, and the ceremony is closed.

There is no person who has ever witnessed this ceremony that does not feel the sublimest and the tenderest emotions: it is a combined offering of the gratitude of hundreds to the throne of Divine Mercy!

The officers of this hospital are, a president, treasurer, physician, chief-clerk, under clerk and receiver, surgeon, apothecary, wardrobe-keeper, and assistant clerk, steward, matron, &c. The number of governors, some of whom superintend this hospital, in their several appropriate departments, is very considerable; and it must be allowed that no institution of such magnitude is, upon the whole, better conducted: though some have thought that the diet, which is plain and simple, might admit of useful alterations, particularly with regard to vegetables, &c., without any material addition of expence. The qualifications of governors are 200*l.* and a present of 200*l.* more, which is expected upon election. This institution is supported by the revenues of its establishments and funds, and also by legacies and benefactions.

HOSPITAL, Emanuel, is situated in Tothill-fields, in Westminster, and was founded by lady Dacres in 1601, for 20 aged single men and women, each of whom have an allowance of 10*l.* per annum, with the liberty of bringing up a poor child. The city of London has this charity in trust, with 200*l.* a-year for its support, issuing from a lease of 199 years, at the expiration of which, the whole manor of Brainsburton, in the county of York, amounting to above 600*l.* per annum, is devised for the augmentation of this foundation. In 1735 the court of lord mayor and aldermen erected a school-house and dormitory adjoining to this hospital, for the reception of twenty poor boys and girls, to be elected out of the parishes of St. Margaret, Westminster, and of Chelsea and Hayes in Middlesex, to which the parish of St. John, Westminster, has since been added, by the court of aldermen, none of the children being admissible under seven years of age, nor to be maintained there after 14, who are supplied with all the necessaries of life; the boys are taught to read, write, and account, and the girls to read, write, and do plain-work.

In consequence of the increased value of the lands appropriated to the support of this institution, the governors obtained an act of parliament in 1795 for augmenting the number of objects of this charity: and after obtaining this act, five men and five women were admitted as out-pensioners, with such allowance as the court should think fit. And also besides the 20 children in the hospital, eight other poor boys are clothed and educated at the hospital's expence, their ages being at the time of election from seven to ten. The

number of girls in the hospital has been increased from 10 to 12. In consequence of this act the 10 out-pensioners are allowed 10*l.* per annum, till houses in the hospital become vacant, when they are admitted, and other out-pensioners appointed in their room.

A school was opened at Brainsburton, to which eight poor boys were sent, and there clothed, maintained, and educated at an easy expence, compared with that of the hospital in town. In the year 1802 the court of aldermen issued new ordinances and regulations, similar to those of the year 1795. The salaries and allowances to the master and mistresses, and to the warden and steward, matron, and poor men and women in the hospital, and also to the out-pensioners, were settled during the pleasure of the court, and have since been increased; and the court undertook to pay all the bills of expenture. The charges are as follows:

| | | |
|---|---|-----|
| The master, with the house and garden free of taxes, | } | £ |
| The mistresses, do. | } | 110 |
| The poor men and women, in-pensioners with a chaldron of coals, | } | 18 |
| The poor men and women, out-pensioners, | } | 10 |
| The warden and steward, in addition to the 18 <i>l.</i> as in-pensioners, | } | 10 |
| The matron, do. | } | 20 |

All these allowance are payable quarterly, and the coals delivered at Michaelmas. A diet table is also prescribed. The whole charity now consists of a master and mistress, and 20 in-pensioners, *viz.* 10 men, of whom one is the warden, and 10 women, of whom one is the matron, whose allowances have been lately increased; five men and five women, as out-pensioners: also ten boys and ten girls, who are in-pensioners, and have a school-room, who are all apprenticed to trades, with a premium of 10*l.* half paid at the time of binding, and the other moiety when they have served half their apprenticeship.

HOSPITAL, Fever. See *HOUSE of Recovery.*

HOSPITAL, Foundling, was established, at the solicitation of Thomas Coram, esq. by royal charter, in the 13th year of George II. and incorporated by the name of "The governors and guardians of the hospital for the maintenance and education of exposed and deserted young children:" and the powers granted by charter were enlarged and confirmed by a statute of the same year. The corporation of this hospital is allowed to purchase lands or tenements to the yearly value of 4000*l.* This charity is under the management of a president, the king being patron; six vice-presidents, treasurer, and governors. The subordinate officers are a chaplain, morning preacher, evening preacher, secretary, solicitor, matron, school-master, treasurer's clerk, and organist. This hospital has two physicians, a surgeon, and apothecary. In 1742 the noble building in Lambs-conduit fields for the use of this hospital was begun to be erected; one wing was finished in 1745; the chapel was begun in 1747; and in 1749 orders were given for building the other wing of the hospital, which, together with the treasurer's house, was ready for habitation in 1752. The whole building was originally calculated to hold 400 children; and the talents of several eminent artists were employed in contributing to its embellishments; among whom were Mr. Hogarth, Mr. Hayman, Mr. Highmore, Rybrack, &c. Mr. Handel, upon the building of the chapel, gave an organ, and the benefit of his oratorio of the Messiah, the performance of which was conducted by himself: this he repeated several years, which produced to the charity 6700*l.* and by his will he bequeathed to it his property in the music. Before the end of the year 1752 the hospital

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hospital had received 1040 children, of whom 559 were then under its protection; but the expence far exceeding the income, application was made to parliament for assistance; and in 1756 the house of commons, after passing three introductory resolutions, voted 10,000*l.* in consequence of which, before the 31st of December 1757, during an interval of little more than a year and a half, the number of children that were received amounted to 5510. Large sums were afterwards granted, and the number of infants, in 1760, increased to 6000, which they had no adequate income to maintain. The corporation received continual parliamentary assistance, during 15 years, till 1771, when it ceased, at an average of not less than 33,000*l.* per annum; and the number of children in 1769 was reduced to 1000, by apprenticing all who could be placed out. The country hospitals were discontinued, and the establishment reduced to its permanent income. The improvement of the revenue by granting building leases of the lands, belonging to the hospital, was the next method adopted. Ten acres of the 56 purchased of lord Salisbury had been occupied by the hospital and its conveniences; and after several delays and demurs, it was agreed, in 1788, that the ground which lay south of and adjoining to the road leading from the gates of the hospital to Gray's Inn-lane should be let on building leases. In the years 1783, 1793, and 1794 the plan of building leases was fully adopted, and in subsequent years carried on very much to the embellishment of the vicinity of the hospital, and to the improvement of its revenues. The emoluments arising from these improvements, and from the increase of governors and benefactions, have enabled this corporation to replace the stock which they had been under a necessity of parting with for the support of the charity, to repair the hospital, to liquidate its outstanding debts, and at the same time gradually to enlarge the establishment of its children; and it affords the most encouraging prospect of farther augmentation. The ordinary age of reception of children is under two months, and upon the hearing of the petitions, the character and exigency of the mother, and desertion of the father, are investigated. The age, after which children cannot be received, is 12 months, unless they are the children of soldiers and sailors, the time of whose reception is extended to five years of age. The children, after admission, are numbered and regilled, and their billets made up; for this purpose the secretary writes a number on a slip of parchment, and affixes it to their clothes; and great care is taken that these numbers remain fixed to the children whilst they continue at nurse: he then makes up the billet, which contains the number, sex, and supposed age, the date of reception, and any particular writing or token brought with the child, which is also marked with its number. The billet is marked on the outside with the number, date, and letter M or F to distinguish the sex. These billets, being the only means which can enable the governors to know the children, in case they should be enquired for, are kept with great secrecy and care, and are never opened but by order of the general committee. After registry and baptism, the children are committed to the care of inspectors, who find out proper nurses, and superintend their conduct: when the children attain the age of four or five years, and not before, they are remanded to the hospital, when the secretary returns receipts for them to the inspectors; and they are then inoculated or vaccinated. The mortality of children, committed to the care of nurses, is very small; the average of those who died under 12 months in 10 years, being only one in six, and for the last four or five years even less than that proportion.

The children admitted to this hospital are not only nursed,

but educated and employed under proper regulations, and provided with all necessaries, till they attain the age appointed by parliament for their discharge, *viz.* twenty-four for males, and twenty-one for females, unless they be previously married with the consent of the committee: at such time, the general committee, at their discretion, may give them cloaths, money, or necessaries, not exceeding the value of ten pounds. In the mean while, the corporation of the hospital may employ the children educated and maintained here in any sort of labour, or manufacture, or in the sea service; and bind such children apprentices, or place them out as servants, or mariners, to any husbandman, master or captain of a ship, or other person, until the aforesaid respective ages. The girls are distributed into three classes, under the care of three different mistresses, by whom they are taught needle-work, and reading, to assist in the house-work, kitchen, and laundry, &c. The boys are put out apprentices at twelve or thirteen years of age, and the girls at fourteen; and they are disposed of with great attention on the part of the committee. The reports as to their subsequent conduct, which is particularly inquired into, have been very favourable. By a report of sir T. Bernard in 1798 it appears, that out of 252 apprentices, 166 were doing well; and of the remaining 86, 15 had turned out ill, partly through their own fault and partly through that of their masters. The proportion of good servants in place and good apprentices far exceeds the number of the others; and there are many respectable persons at present in London, married and settled in business, who have been nursed, educated and apprenticed by this charity. By an attention to cleanliness and diet the children have of late been more healthy than formerly.

HOSPITAL, *French*, in the parish of St. Luke, was erected in the year 1716; and the governors of it, by letters patent of Geo. I. anno 1718, were constituted a body politic and corporate, by the appellation of "The governor and directors of the hospital, for poor French Protestants and their descendants, residing in Great Britain."

This institution owes its rise to the charity of M. de Castigny, master of the buckhounds to king William III., as prince of Orange, who bequeathed 1000*l.* for a building and its maintenance. The interest of this sum was permitted to accumulate, and aided by voluntary contribution; so that a fund was raised sufficient to erect a building for the accommodation of about 80 poor persons. The corporation, by the subsequent contributions of benevolent refugees and others, has been enabled, at different times, to enlarge the buildings, so as to admit 200 poor, who are either very aged, or disordered in mind or body. They are supplied with every necessary for their subsistence and relief. The government of this hospital is vested in a governor, deputy-governor, and 37 directors. The governor remains in office three years; the deputy-governor is chosen for one year; also a treasurer, secretary, and minister. Eight directors are chosen at the four quarterly courts to constitute a committee, who meet at the hospital every Saturday. Five visitors are chosen annually from among the directors, who, with the physician and surgeon, make a general visit in June, and report the state of the whole institution to the next court. The treasurer and secretary are chosen annually: the minister performs divine service in the chapel of the hospital, and visits the sick at least once a week. The physician attends regularly once a week, and at any other time when required. The surgeon and apothecary attend at least three times in the week. The steward has the superintendance of the house and family. The chapel is commodious, in which an annual sermon is preached upon Wed-

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Wednesday next before Easter for the benefit of the hospital. The number of beds is 200, but that of patients is much less considerable.

HOSPITAL, *St. George's*, near Hyde-park Corner, was instituted in 1733 for the relief of the poor sick and lame, who are supplied with advice, medicine, diet, washing, lodging, and some of them also with cloaths. This hospital is under the direction of a general board of the governors, now amounting to about 350, who meet regularly five times a year, and a committee of which meets every Wednesday to admit and discharge patients, and transact the business of the hospital. The qualification for a governor is 5*l.* 5*s.* as an annual subscription, or 50*l.* as a single benefaction. The king is president, there are six vice-presidents, two treasurers, four physicians, four surgeons, and two assistant surgeons, six visiting apothecaries: the domestic officers are a chaplain, apothecary, secretary, matron, and messenger. Besides the patients that are admitted into the house, relief is afforded to a considerable number of out-patients. By the account of the year 1808, it appears that from the first institution the patients discharged amounted to 209,430, and the number of patients relieved in that year was 2717; 1596 being in-patients, and 1121 out-patients. The whole expence during the same year amounted to 5880*l.* 0*s.* 8*d.* The annual subscriptions are stated at 2378*l.* 9*s.* To this hospital is annexed another institution denominated "The Charity for Convalescents of *St. George's Hospital*," and established in the year 1809.

HOSPITAL, *Greenwich*, is a retreat for seamen, who, by age, wounds, or other accidents, are disabled from service; and for the widows and children of such as are slain in the service.

This, in point of magnificence and spaciousness, greatly excels even Chelsea hospital. King William and queen Mary had the benevolent design of establishing this hospital much at heart; and they accordingly made a grant of the royal palace at Greenwich, a part of which, on the west side, had been begun to be rebuilt for a royal palace by king Charles II., and also of a large adjoining space of ground, for this purpose. King William, after queen Mary's death, on the 25th of October 1695, appointed by patent a number of commissioners for directing the building and endowing of this intended hospital, and granted a large sum out of his civil list for that end, and his royal successors were also considerable benefactors to it. At length annual sums were granted by parliament for finishing this truly magnificent ornament and glory of Great Britain: and it was fully completed in the reign of George II. By an act of the 7th and 8th of king William, cap. 21. the privilege of admission into this hospital was granted to registered seamen, when maimed or superannuated, and to the widows and children of those who were killed in the service. This act for registering seamen was enforced by 8 and 9 W. III. cap. 22. but repealed by 9 Anne. Every seaman is required to allow out of his wages sixpence a month, for the better support of the said hospital; for which duty-receivers are appointed, &c. The money is paid into a receiver's office on Tower-hill, which is under the management of three commissioners and their clerks. (8 and 9 W. III. cap. 23. 10 Anne. 2 Geo. II. cap. 7.) By the last act a seaman, absenting himself from his ship without leave, shall forfeit for every day's absence two days' pay to Greenwich hospital to be deducted out of his wages: and a seaman, not entering into the king's service, who shall leave his ship before he hath a discharge in writing, shall forfeit one month's pay in like manner.

By 8 Geo. II. cap. 29, the net rents and profits of the estates forfeited by the attainder of James late earl of Derwentwater, and of Charles Radcliff, were applied in the first place to the completing of the building of Greenwich hospital; and it is hereby enacted, that all seamen in the merchant's service who shall happen to be maimed in fighting, not only against pirates, but against an enemy of his majesty, &c. shall be admitted into and provided for in the said hospital, as well as seamen maimed or disabled in the king's actual service: and in the next place, the whole net rents of those forfeited estates shall be for ever applicable for the support of the said royal hospital, for the better maintenance of the seamen therein, worn out and become decrepit in the service of their country. This law was farther explained and amended by 11 Geo. II. cap. 30.

Provision is made for securing the payment of the sixpence per month from privateers by 18 Geo. II. cap. 21. and for securing prize money belonging to the hospital by 20 Geo. II. cap. 24. The governors are empowered to grant out-pensions to decrepit seamen, by 3 Geo. III. cap. 16.; and persons personating or falsely assuming the name and character of out-pensioners, shall be guilty of felony without benefit of clergy: and those who receive half-yearly pensions shall, together with the printed bill delivered to them by the commissioners, produce a certificate under the hand of the minister and church-wardens, where they reside, testifying that they are the persons named in such bill.

The pensioners belonging to this hospital are clothed in blue, and allowed stockings, shoes, linen, and a shilling a week for other necessaries. The victualling is according to the allowance of Chelsea hospital, *viz.* four men to a mess, each mess to contain four pounds of flesh, a gallon of beer, &c.

The governors of this hospital are the great officers of state, and persons in high posts under the king; and it is under the more particular inspection and government of twenty-four commissioners, a governor with an annual salary of 1000*l.* and clerk; a lieutenant-governor, whose salary is 400*l.* a-year; four captains, allowed 230*l.* a-year each; and seven lieutenants, with 115*l.* a-year each; a treasurer, whose salary is 200*l.* with two clerks; secretary with 160*l.* a-year and clerk, auditor, whose annual salary is 100*l.* and clerk, surveyor with 200*l.* salary, clerk of works at five shillings a day, a physician at ten shillings a day, a surgeon with an annual salary of 150*l.* a servant and two assistants, dispenser with 50*l.* a-year and his assistants, two chaplains with a salary of 130*l.* each, steward with a salary of 160*l.* and three clerks; clerk of cheque with 100*l.* salary and three clerks; brewer, three matrons, organist, messenger, two chief cooks and four mates, scullery man and two mates, butler and two mates, porter and barber. For a particular account of the building and its establishment, see GREENWICH. The chest at Chatham is now under the management of the governors of this hospital. See CHEST.

HOSPITAL, *Guy's*, situated in the parish of St. Thomas, Southwark, was founded in his life-time, by Thomas Guy, esq. a very wealthy citizen and bookfeller of London. For this purpose he took a lease of a piece of ground belonging to St. Thomas's hospital, for the term of 999 years, at a ground-rent of 30*l.* per annum; the foundation of the intended hospital was laid in 1722, and the fabric was roofed before the death of the founder, which happened in the year 1724. The charge of erecting and furnishing this hospital

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amounted to the sum of 18,793*l.* 16*s.* 1*d.* and the sum left to endow it was 219,499*l.* 6*s.* 4*d.* and upwards. The governors of this hospital were incorporated by act of parliament, made in the 11th year of Geo. I. anno 1725, under the title of "The President and Governors of the Hospital founded at the sole cost and charges of Thomas Guy, esq." and under this title they are empowered to purchase, either in perpetuity or for a term of years, any estate not exceeding 12,000*l.* per annum. The number of governors appointed to be chosen from those of St. Thomas's hospital, by the founder, is 60; and it is enacted that if the number does not exceed 40, the vacancies shall be supplied by the lord chancellor, lord keeper, or commissioners of the great seal, lords chief justices of the king's bench and common pleas, and lord chief baron of the exchequer, so as to make up the number of 50. It is also enacted, that the management of the hospital be referred to a president, treasurer and 21 governors; forming a committee appointed by a general court, seven of whom are annually changed; this committee is empowered to chuse, and at pleasure to remove, all officers and servants employed in the hospital, except the physicians, surgeons, clerk, and chaplain, who are elected by the general court, to appoint their salaries, to admit objects of charity, and in general to transact the affairs of the hospital subject to the inspection and controul of a general court; and this general court has power to make any by-laws for the better government of the corporation. This hospital, so liberally endowed by its founder, was established for the reception and relief of upwards of 400 sick and diseased poor objects; besides twenty incurable lunatics, who are provided for in a separate building. Since the decease of Mr. Guy, the governors have taken a lease of an additional spot of ground, for which, with the former, they annually pay to St. Thomas's hospital the sum of 100*l.* On this ground they have erected two handsome wings; in the centre of one wing there is a spacious hall and rooms for public business, and opposite to it in the other a neat and elegant chapel, in which there is a finely executed statue of the founder by Mr. Bacon. The corner house in one wing is for the residence of the treasurer, and the other houses are for the chaplain, steward, and apothecary. This hospital is under the medical inspection of three physicians and three surgeons, who are allowed 40*l.* a-year each, an apothecary, who has 90*l.* a-year for himself and assistant, and a house. The officers are a clerk, chaplain, steward, accomptant, matron, butler, and assistant; surgery man, porter, beadle, keeper of the lunatic men, and a keeper of the lunatic women. It contains 13 wards and 411 beds; and the number of patients admitted into this hospital, at an average of ten years, has been 2244 yearly; of whom 2014 have been discharged, and 230 have died: under the prudent conduct of the treasurer and governors, it does great honour to the liberality of its founder. The day of admission to this hospital is Wednesday. To this hospital belongs a theatre for chemical, medical, and anatomical lectures. On one evening in the week medical subjects are debated for the improvement of the science and practice. A library is also a part of this establishment, well furnished with professional works, and a collection of anatomical preparations. We shall add under this article, that Mr. Guy (see Guy) has bequeathed to the president and governors of Christ's hospital, a perpetual annuity of 400*l.* for taking into the said hospital four children yearly, at the nomination of the governors of his hospital: preference being always given to his own relations, who have never failed to offer themselves. To his poor aged relations he gave annuities during life to the amount of 870*l.* and among his younger relations and executors the sum of 75,589*l.* together with

the sum of 1000*l.* for discharging poor prisoners, within the city of London, and counties of Middlesex and Surry, who could be released for the sum of five pounds.

He likewise erected an alms-house, with a library at Tamworth, where his mother resided, and which he represented in several parliaments, for the use of 14 poor men and women; to whom he allowed certain pensions during life, and at his death, for their future support and putting out children apprentices, &c. he bequeathed a perpetual annual sum of 115*l.* Mr. Guy also built and furnished, at his own expence, in the year 1707, three wards on the north side of the outer court of St. Thomas's hospital; and gave to the same 100*l.* per annum, for eleven years immediately preceding the foundation of his hospital. Some time before his death, he removed the frontispiece of the said hospital of St. Thomas, which stood over the gate-way in the borough, and erected the same in the place where it now stands, fronting the street; and having enlarged the gate-way, rebuilt the two large houses on the sides thereof, and erected the stately iron-gate between them, at an expence of between 2 and 3000*l.* To many of his relations he gave stated allowances of 10 or 20*l.* per annum, and to others, money for advancing them in the world.

HOSPITAL of Jerusalem. See HOSPITALER.

HOSPITAL, Jews, called *בית הולים*, *Beth-holem*, or house for relief of the sick, was founded by subscription in 1748. It was first established in Leman-street, Goodman's-fields. This charity, which administers medicines and advice gratis, was maintained by a certain sum allowed by the synagogue, and private contributions, amounting, soon after its first establishment, to about 500*l.* a-year. An enlargement becoming necessary, a more commodious building was erected in 1792 at Mile-end, Old-town, which contains accommodation for 14 sick men, and as many sick women, and for eight lying-in women; besides 21 beds for the old and indigent. The beds for the sick are in four wards, those for lying-in women in a separate apartment, and those for the old and indigent in ten rooms, with a long-sitting room, which has two fire-places. The contributions for the support of this charitable institution are general throughout the Portuguese congregations by offerings made at the synagogue, and their elders grant from their general charity fund from 270 to 300*l.* annually towards its support; they have also a small capital in the funds. This hospital dispenses medicines to all persons who hold any employment under their synagogue, and to all the poor of their congregation.

HOSPITAL, German and Dutch Jews, *נוה צדק*, *Navay Tzadek*, i. e. dwelling-place of justice or of charity, an establishment situated in Mile-end, Old-town, of wider extent than that of Beth-holem, which arose from the philanthropic exertions of Benjamin and Abraham Goldsmid, esqrs. who, in 1795, commenced a collection among their friends for the purpose of relieving the poor of the class denominated German Jews. The sums contributed by Jewish and Christian benevolence enabled them, in 1797, to purchase 20,000*l.* imperial annuities of three per cent. and by accumulation of interest and increase of donations, the aggregate sum, in 1806, amounted to the value of 22,000*l.* stock, at the current price of that period. After previous deliberation it was agreed to erect an hospital for the reception and support of the aged poor, as well as for the education and industrious employment of both sexes. Ten thousand pounds of three per cent. consols bank-annuities were purchased, and this sum, together with the former stock, was transferred to trustees as an inviolable fund for its endowment, yielding 900*l.* per annum. In February, A.D. 1806, the freehold on which the hospital was afterwards erected, was purchased

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for 2300*l.*; the house was completed and opened in June, 1807, for the reception of five aged men, five aged women, 10 boys, and eight girls. The adjoining freehold was also purchased for 2000*l.* in which it is further proposed to erect an enlargement of the hospital for the admission of an additional number of patients. Two gentlemen, *viz.* Dr. Myers, and Mr. Van Oven, offered to fulfil the duties of physician and surgeon gratis: 25 guineas constitute a governor for life: 10 governors are competent for business; and at general meetings held in March, officers are elected, and also a house-committee of 24, and two auditors. This institution is under the management of a general committee of 12 governors, which attends at the hospital on Sunday, weekly. None are considered as proper objects of this charity who do not belong to one of the three established synagogues of German Jews in London; nor can any be admitted under 55 years of age. The boys are admitted from 10 to 13 years of age, and maintained till the expiration of their apprenticeship. The girls are admitted from 7 to 10 years of age. The present officers are, a patron, president, two vice-presidents, two treasurers, a physician, surgeon, solicitor, and secretary.

HOSPITAL, *Lock*, (*lock* being derived from *loke*, a house for lepers,) near Hyde-park corner, was instituted in the year 1746, for the relief of venereal patients only. Every gentleman subscribing five guineas a year, or upwards, shall be a governor of this hospital, and whoever gives a benefaction of fifty-pounds at one time becomes a governor for life. This hospital is under the direction of a president, seven vice-presidents, two treasurers, and a committee of the governors, who meet every Thursday for the business of the institution. It is attended by a physician, two surgeons, and two visiting apothecaries. The officers are a chaplain, house-surgeon, secretary, collector, and matron. By a report circulated in November 1809, it appears that the number of patients perfectly cured to that time amounted to 30,577; many persons of both sexes were thus restored to their families, who might otherwise have lingered out a loathsome and miserable existence; many abandoned characters were reclaimed by the religious instructions afforded them; and the progress of the contagious disease, dreadful to the sufferer and destructive to posterity, was materially arrested. The *Lock Asylum* is an appendage to the hospital, which provides for females after cure, who have no means of accommodation and support when they leave the hospital, and who might otherwise be urged by necessity to return to that course of vice and infamy which they have abandoned. This institution has been found of singular utility. The number of women admitted to this asylum from July 1787 to Lady-day 1809, has been five hundred, many of whom have been preserved from ruin, and rendered useful members of the community. The asylum is under the superintendance of a patron, president, three vice-presidents, a chaplain, and secretary.

HOSPITAL, *London*, in Mile-end road, was instituted in 1740, principally by the instrumentality of John Harrison, *esq.*, its first surgeon, and incorporated in 1759, 32 Geo. II. This hospital, which was first founded in Prescott-street, Goodman's fields, is now supported, in a very large and commodious building, by voluntary contributions, for the relief of all sick and wounded persons.

The in-patients are supplied with advice, medicine, diet, lodging, washing, and every other kind of comfortable assistance: the out-patients receive medicines and advice daily. None are admitted into the hospital with infectious distempers, or the venereal disease, or who are athmatic or consumptive, or deemed incurable or improper for admission by

the physicians or surgeons; but such persons may be relieved as out-patients. The average number of patients in this hospital at any one time is about 180, but its wards are 18 in number, and would contain nearly 400. This hospital has subsisted during a period of 68 years, and in that time has relieved 507,802 to Jan. 1, 1809, which is an average of 7466 persons in each year. During the year 1809, the in-patients amounted to 1406, and the out-patients to 877. The governors, in 1807, made an interesting appeal to the benevolence of the public, and with such success, that the committee were enabled immediately to discharge the hospital debts, amounting to 3824*l.* 10*s.* 11*d.* In consequence of farther liberal contributions, they began with the admission of 37 in-patients, and they have since been progressively augmenting the establishment, according to the extent of their power. The funds of the hospital, at the close of the year 1808, consisted of 3000*l.* bank-stock, 225*l.* 5 per cent. navy subscription of bank on bank-stock, 1804; 200*l.* 4 per cent., 65,292*l.* 12*s.* 2*d.* 3 per cent. consols; 9779*l.* 9*s.* 8*d.* 3 per cent. reduced; 400*l.* 3 per cent. O.S.S. ann.; 45*l.* 3 per cent. New ditto.; 310*l.* India stock; 571*l.* 16*s.* South Sea stock; 500*l.* 3 per cent. 1726; 50*l.* bond; 338*l.* 8*s.* 8*d.* cash; land and houses near the hospital *ad valorem*.

The charity is under the government and direction of a president, five vice-presidents, a treasurer, and of such persons, who, by giving a benefaction of thirty guineas or more at one time become governors for life; or who subscribe five guineas or more per annum. A house-committee of thirty governors is annually appointed at the quarterly court, in December, one of whom is chosen chairman; and they meet every week at the hospital to transact the necessary business.

There is also a committee of accounts, consisting of twelve governors, appointed at the quarterly court in June for one year, who meet there quarterly to examine and audit the bills and accounts, and a medical committee also consisting of twelve governors, elected annually at the court in December, who examine all the medicines and drugs. The management of the house is inspected by two governors, appointed visitors by the house-committee. Three physicians and three surgeons attend this hospital: the officers are a chaplain, apothecary, secretary and receiver, steward and matron. Every governor is entitled to send one in-patient at a time, and four out-patients. Subscribers, that are not governors, may send out-patients; the day of admission is Tuesday.

The "Samaritan Society" is an appendage to the London Hospital, instituted A.D. 1791, for the relief and prevention of various circumstances of distress, not within the provision of public hospitals, and depending upon donations and bequests. Annual members contribute one guinea, and benefactions of five guineas constitute members for life. The affairs of this society are conducted in the consulting-room of the hospital, allotted in 1792 for its meetings and business, by a committee of nineteen for general purposes; a committee of seven for public communications and correspondence; seven auditors, a treasurer, an almoner, a secretary, and collector.

HOSPITAL, *St. Luke's*, for Lunatics, in Old-street Road, was instituted in 1751. The new extensive building for this hospital was erected at an expence of 5000*l.* raised by voluntary contributions, upon leasehold ground belonging to St. Bartholomew's hospital: the lease is held for a term of 40 years, renewable every fourteen years, on payment of a fine of 200*l.* and at the yearly rent of 200*l.* It was completely finished at the close of the year 1786; and on the 1st of January, 1787, the

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the patients were removed into it. The house accommodates 300 patients, who are distinguished by two lists or classes, 200 on the curable list, and 100 on the incurable list.

It appears, from the printed state of this hospital, that the number of patients received into it from the opening on the 30th of July, 1751, to the 21st of April, 1809, inclusive, amounted to 9042, of whom those discharged uncured and received again at 7s. a week, are 323. Of these 3915 have been discharged cured, and 3101 discharged uncured, 783 discharged as idiots, 748 died, and 251 taken away at the desire of friends. Of the incurable, 56 were taken away at the desire of friends, 145 died, and 18 were cured.

The property of the hospital consists of the building and premises in Old-street; 64,000*l.* consol. 3 per cent. annuities; 38,100*l.* reduced annuities; 22,500*l.* Old South Sea annuities; 5000*l.* 4 per cent. annuities; 220*l.* New South Sea annuities; 1000*l.* reduced annuities; divers legacies unreceived, besides contingent and reversionary legacies; an annuity of 5*l.* 5s. and another of 100 guineas by the late Samuel Whitbread, esq. The income of this property is considerably increased by casual benefactions and legacies, and by cash received from the board of incurables, all which, with a balance in hand, amounted, in 1808, to 9053*l.* 16s. 3*d.*, and the expenditure amounted in the whole to 7934*l.* 17s. 3*d.*

Persons paying the entire sum of twenty-guineas or upwards, or paying seven guineas at least, and signing an agreement to pay 3*l.* 18s. yearly, for the four next succeeding years, are admitted governors of this hospital; nine of whom constitute a general court, held on the third Wednesday in February, every year. At this court one president, four vice-presidents, a treasurer, a general committee, physician, surgeon, resident, apothecary, secretary, master, matron, and accountant, shall be elected for the ensuing year. The general committee consists of the president, vice-presidents, and treasurer, and of five governors, named as lessees in the lease of the ground on which the hospital is built, and of all persons who pay in their own right 100*l.* or upwards, who are standing members of it, and of such other thirty governors resident in the bills of mortality as are elected at the court in February.

The general committee meets monthly or oftener, if necessary, and is empowered to transact all the necessary business of this hospital, and to appoint a house-committee and sub-committees. The physician and surgeon attend on every committee day, and one other day in the week, and as often as occasion requires. The resident apothecary is precluded from any other practice. No fees are taken by any officer. Patients are admitted into this hospital according to the order of time in which their petitions, previously signed by a governor, have been delivered to the secretary, and without any expence, except that the parish poor shall provide their bedding, which they may take away at their discharge. But no person can be admitted into this hospital who is not poor and mad; or who hath been a lunatic more than twelve calendar months; or who hath been discharged uncured from any other hospital for the reception of lunatics, or who is troubled with epileptic or convulsive fits; or who is deemed an idiot; or who is infected with the venereal disease; nor any woman with child; nor any child under the age of twelve, nor any person above the age of seventy years. Besides a petition, the governors require two printed certificates; one testifying the above particulars, signed by the minister and churchwardens, or overseers of the poor of the parish or place where the proposed patient resides; and the other to the same purpose, signed by some physician, surgeon, or apothecary, who hath visited such patient; which signatures must be attested upon oath.

Upon notice being sent from the committee for the patient to be brought for examination, there must be left in writing with the secretary, within three days afterwards, the names, business, and place of abode of two substantial housekeepers, residing within the bills of mortality, who must be present precisely at the hour when the patient (not being parish-poor, or receiving alms or support from any public body or community) is to be admitted upon the payment of three pounds; and if such patient be parish-poor, or has received alms or support from any public body or community, then upon the payment of six pounds, and to enter into a bond of one hundred pounds to take away the patient when discharged by the committee; which sums of three pounds and six pounds are not returnable unless the patient dies or is discharged within one month after admission.

It is also provided, that the general committee may receive immediately into this hospital any patient who shall have been discharged cured, in case such patient relapse within two months; and that such patients who have been discharged uncured, not exceeding 100, shall be admitted by rotation; on condition of the payment of seven shillings per week for each, till the charity shall be enabled to lessen that expence. The patients are not exposed to view; but their friends are allowed to visit them every Wednesday morning.

HOSPITAL, Lying-in. There are several hospitals of this kind in the cities or suburbs of London and Westminster.

The *Queen's lying-in hospital* was founded in 1752 for the purpose of receiving poor pregnant women, as well married as unmarried, in separate wards, and also of attending them at their own habitations, within a limited circuit. It is now fixed at a house in Baywater; and the government of the charity has been vested in a president, four vice-presidents, a treasurer, and a committee of eighteen governors. An annual subscription of three guineas constitutes a governor, entitled to recommend one in-patient, two to be delivered at their own habitations, and six for advice; and a subscription of 31 guineas at one payment, entitles to the recommendation of one in-patient, six at their own habitations, and twelve for advice, yearly. It is computed that upwards of 45,000 women have received the benefit of this hospital in its respective branches.

Quarterly meetings are held at the hospital; and the committee meet every Tuesday. This hospital was renovated in October 1809, and under the active exertions of its president the duke of Sussex, has now a fair prospect of permanent utility. Her majesty is patroness, and it is under the care of a consulting physician, and physician in ordinary, a surgeon and man-midwife, an apothecary and secretary, a matron, nurses, and collector.

The *Middlesex hospital* for sick and lame, and lying-in married women, in Mary-le-bone Fields, was instituted for the first description of patients in 1745, and for the second in 1747; and for patients afflicted with cancer in 1792. It is under the direction of a patron, a president, 12 vice-presidents, two treasurers, and a committee of the governors; the qualification for a governor is an annual subscription of three guineas, and of a governor for life 30 guineas at one payment. A quarterly general court is held four times in the year. All general courts and weekly boards may appoint committees for carrying on the business: 24 governors are appointed for a weekly board to meet every Tuesday; and 12 for a medical committee, including the physicians, man-midwife, and surgeons, to meet every Saturday. The president, vice-presidents, treasurers, chaplain, physicians, man-midwife, surgeons, apothecary, secretary, collector, and matron, are elected at a quarterly or special
general

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general court. The lying-in ward in this hospital has no communication with those of the sick and lame. The patients are visited by three physicians, an accoucheur, and three surgeons, besides the physician and surgeon of the cancer-ward. The domestic officers are a chaplain, secretary, apothecary, and matron, who reside in the house, have salaries, and are provided with lodging, washing, and board. The house-surgeon also resides in the hospital, under certain stipulated regulations. A sufficient number of midwives to attend women at their own habitations is provided. The day for admission of patients is Tuesday.

The *British* lying-in hospital for married women, in Brownlow-street, Long-acre, was instituted in 1749. This hospital is governed by a president, four vice-presidents, a treasurer, and a committee of 15 governors, who meet every Friday to receive the women recommended, and to direct the ordinary affairs of the house. The qualification of an annual governor is a subscription of five guineas or upwards per annum, and of a perpetual governor a single payment of 40 guineas, each of whom may present two women in the year. This hospital is occasionally visited by three physicians, and one surgeon; and it is provided with an apothecary, chaplain, secretary, matron, and midwife, six nurses, and 62 beds. Female pupils, being widows or married women, not less than 25 years of age, and of approved character, are permitted to attend this hospital, for instruction in midwifery, and have a right to stay in the hospital six months. They are to board in the hospital, and dine at the steward and matron's table; and on leaving the hospital to receive certificates of their qualification. The expences of instruction and board are settled by a general court. The stock of this charity in the public funds amounts to 209*l.* 10*s.* and its expenditure is about 1100*l.* a-year, for which they have the dividends of the above-mentioned stock, and annual subscriptions of about 900*l.* per annum, besides benefactions and legacies, and board of women, who reside in the hospital before and after the period of three weeks, allowed for their lying in and recovery, and pupils. The committee of this hospital have preserved an account of those who have died, from which it appears that in the first 10 years of the institution one woman died in 42; in the fifth 10 years, one died in 288; in the sixth and last 10 years, one in 216; and from the 20th of September, 1806, to the 25th of March, 1808, not one woman died out of 501. In the first 10 years one child died in 15; in the fifth 10 years one died in 77; and in the last nine years and a quarter, one died in 92. The proportion of boys to girls born is about 18 to 17; of still-born, about one to 25; of women bearing twins, one to 84, the whole number being 342. If similar tables were preserved by other institutions of a like kind, they would furnish useful data in calculations relating to population and political economy.

The *city of London* lying-in hospital for married women, in the City road, was instituted in 1750. The government of this hospital is referred to a president, 12 vice-presidents, and a treasurer, chosen annually from among the governors and select committees. The subscription of 30 guineas constitutes a governor for life; those who subscribe five guineas, or three guineas per annum, are governors so long as they continue their subscription. Each governor for life has the privilege of relieving eight patients in a year, and of having two of them on the books at a time. Subscribers of five guineas may relieve five patients, and those who subscribe three guineas may relieve two patients. A double subscription acquires a double privilege. The affairs of the hospital are conducted by a committee of 24, of whom the treasurer is one, who meet at the hospital every Wednesday.

Four of them preside, by rotation, for two successive months, at the public baptisms; and at the Midsummer court six retire, and six are elected to supply their places. The officers, besides the president, vice-presidents, and treasurer, are a preacher and a chaplain, four physicians, two of whom practise more particularly in midwifery, a surgeon, an apothecary, a secretary, and a matron, who is a skilful midwife, and resides in the house, superintending the nurses and servants, and the whole domestic economy. The property of this hospital consists, besides its leasehold premises, of 11,000*l.* three per cent. consol. bank annuities, and 10,000*l.* reduced annuities, and two annuities of 5*l.* and another, during the life of the duke of York, of 25*l.* The whole annual expenditure amounts in general to about 1500*l.* supplied by the dividends on its capital, legacies, subscriptions, and collections at the chapel, and at the anniversary meeting. Pupils are allowed to be received who pay to the charity for their lodging and board during their stay in the hospital, besides some fees to the matron and medical officers. The present building, at the entrance of the City-road, was begun in October, 1770, and completed at an estimated charge of 3500*l.* so as to be open for the reception of patients in April, 1773. It was licensed for the public reception of pregnant women, pursuant to an act of parliament, passed in the 13th year of the reign of George III. (13 Geo. III. c. 82.) This hospital, which in 1809 had subsisted 59 years, has relieved, in that time, 24,902 poor married women, of whom 25,196 children have been born. During the year, ending Lady-day, 1809, their number was 413, and the male children born were 227, and the females 186. Out of the whole number, 292 women have been delivered of twins, and two women had three children at the birth.

The *Westminster* new lying-in hospital, on the Surrey side of Westminster-bridge, was instituted by subscription in the year 1765. It is governed by a president, four vice-presidents, a treasurer, and a committee of governors. The qualifications of governors are various. An annual subscription of three guineas entitles to recommend three in-patients, three out-patients at their own habitations, and any number for advice, and to vote at elections. An annual subscription of five guineas entitles to recommend five in-patients, five at their own habitations, and any number for advice, with a vote at elections, &c. A subscription of 30 guineas constitutes a governor for life, entitled to recommend yearly three in-patients, three at their own habitations, and any number for advice, and to vote at elections, &c. The privilege of recommending patients is extended in proportion to the subscription. There are four quarterly meetings at the hospital in the year; and a weekly board, consisting of any number of the committee annually appointed in January, is held at the hospital every Tuesday, for the general affairs of the institution. The physicians practising midwifery are allowed to take pupils, two of whom may reside in the house for three months, and board for a stipulated price, at the matron's table: female pupils are also allowed upon the same terms. One of the physicians attends at the hospital every Tuesday and Friday, from 11 till 12 o'clock, to give advice in the several disorders incident to child-bearing and infancy. It is attended by two physicians and accoucheurs, a physician extraordinary, an apothecary, and a surgeon. The officers are a secretary, chaplain, and matron or midwife, constantly resident in the hospital, superintending the nurses and servants, &c.

In connection with lying-in hospitals, we may mention two or three institutions for the purpose of delivering poor married women at their own habitations. An useful institution of
this

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this kind dates its rise in the year 1757, and is under the direction of a president, six vice-presidents, a treasurer, secretary, and governors. An annual subscription of one guinea, or more, or a benefaction of 10 guineas or upwards, constitutes a governor. An annual governor for one guinea may recommend eight objects within the year, and in proportion for a larger sum, and the governor for life recommends the same number annually. This institution is under the direction of a president, six vice-presidents, a treasurer, a consulting physician, three physicians and accoucheurs. The subordinate officers are a secretary and collector. The midwives are 27 in number, who reside in all parts of the town. During the first 50 years of this society the deliveries amounted to 178,983; and in the year 1808 to 4100. Another institution of the same kind, called the "Benevolent institution, for the sole purpose of delivering poor married women at their own habitations," was established in January, 1780. It is supported and conducted on a plan similar to that of the institution last mentioned. The officers are a president, seven vice-presidents, a treasurer, a physician, secretary, and 40 midwives. Another society of a like kind was formed at Tottenham, near London, in August, 1791.

HOSPITAL, *Magdalen*, in St. George's Fields, was instituted in the year 1758, for the relief and reformation of prostitutes. The queen is patroness of this charity; it is under the direction of a president, six vice-presidents, treasurer, and committee of 32 governors. It is attended by a physician, two surgeons, and two apothecaries. The domestic officers are a chaplain, steward, secretary, matron and assistant, and messenger and assistant. Twenty guineas constitute a governor for life, and an annual subscription of five guineas is a qualification for a governor for one year, which subscription, when it amounts to 25 guineas, qualifies a governor for life. Four general courts are held in every year; and at the general court in April, the committee, and all officers, except the president, are elected. The committee, consisting of 32 governors, meet at the hospital every Thursday; and two of them, in rotation, attend at the chapel every Sunday at morning and evening service, when a collection is made previously to admission. This hospital was first established in Prescott-street; Goodman's-fields; and the new building in Blackfriars' road, St. George's-fields, was opened in the year 1758. An act of incorporation was granted by parliament in 1769. The new hospital is calculated to receive about 80 penitents every year; and during the period of its subsistence more than two-thirds of the women who have been admitted have been reconciled to their friends, or placed in honest employments or reputable services. A very considerable number have been married, and have become respectable members of society; but some, as might naturally be expected, have relapsed into their former errors. A probationary ward has been instituted for the young women on their first admission; a separation of those of different descriptions and qualifications has been established; and apartments have been fitted up in the lodge for the residence of the chaplain and his family; that he may with the greater facility continue to devote his time and attention to the instruction of the women. Each class is entrusted to its particular assistant, and the whole is under the inspection of the matron. It appears by a statement, extracted from the books of the hospital, that from the 10th of August, 1758, to the 7th of January, 1808; 3865 women have been admitted, and that of these 2532 have been reconciled to their friends, or placed in situations of reputable service or employment; 102 have been lunatic, or troubled with fits or incurable disorders; 72

have died; 573 have been discharged at their own request; and 506 discharged for improper behaviour.

An institution, in aid of the Magdalen hospital, was founded in the year 1807, under the appellation of the "Female Penitentiary," the external management of which was confided to a committee of 24 gentlemen, together with a treasurer, a secretary, and assistant; and the interior to a committee of 24 married ladies. The establishment was fixed at Cumming-house, Pentonville, Islington, by the purchase of a long lease of the house and adjoining ground, to which has been since added a contiguous building for a temporary infirmary. The penitentiary-house is divided into six apartments; a temporary ward for cases of emergency, two probationary wards, wards for persons fully admitted after probation, a ward for diseased subjects, a sick ward, and a refractory ward: a part of the house is appropriated to divine service. This institution is attended gratis by a physician, surgeon, and apothecary. The matron resides in the house.

HOSPITAL, *St. Peter's*, at *Newington Butts*, was erected by the company of Fishmongers, by virtue of letters patent of king James I. in 1618, for the reception of divers of their poor members, who had pensions bequeathed them by the wills of some of their company.

HOSPITAL, *Royal*, for disabled soldiers, commonly called *Chelsea-College*.

The building was originally begun by king James I., in the 5th year of his reign, for a college to consist of a number of learned divines, who, being furnished with books and all means of subsistence, might devote their time to the study and teaching of controversial divinity, especially those points in dispute between the churches of England and Rome. Accordingly he incorporated a provost and fellows, by the title of king James's college, in Chelsea. The corporation was endowed by his letters patent, with the reversion of certain lands in Chelsea, and authorized also to receive of his loving subjects lands not exceeding, in the whole, the yearly value of 3000*l*. Every thing being previously settled, king James laid the first stone of the intended college; but for want of money the building went on slowly; and, at length, before an eighth part of the model was executed, it stood still. In this state it remained for several years: but in the year 1616 the king sent letters to the archbishop of Canterbury, requiring him to stir up the clergy in his province to contribute towards it; in consequence of which collections were made in several parishes of England, but their produce was small, and was swallowed by the fees and collectors. The corporation, however, though the building was stopped, was nominally kept up during the life of king James I. The troubles under king Charles I. occasioned all thoughts of completing the work to be laid aside. After the restoration, king Charles II. erecting a convenient hospital for the reception of sick, maimed, and superannuated soldiers, converted the unfinished buildings of this college to that use; whence the hospital has retained the title of the "College." It was founded by king Charles II., carried on by king James II., and finished in the reign of king William and queen Mary, by sir Christopher Wren. The whole expence of this structure amounted, as it is said, to 150,000*l*., and the extent of the ground is above forty acres.

The building is very spacious and magnificent: its figure is a Π ; the middle or front part whereof consists of a chapel and hall; the other two lines, being four stories high, are divided into wards or galleries, two in each story; containing each twenty-six distinct apartments for the foot soldiers. At each of the four corners of the main building, there is a pavilion; in one whereof is the governor's lodging, and the council.

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council-chamber; the other being lodgings for several of the officers of the house. Beside the main building, there are four wings or out-buildings; one for the infirmary, another for several officers of the house, another for old maimed officers of horse and foot; and the fourth for the baker, laundress, &c. The number of pensioners in the house is, in general, estimated at about 400, besides the officers and servants in the house; the out, or extraordinary pensioners, are also very numerous; and these, upon occasion, do duty in the several garrisons, from whence draughts are made for the army, &c. Their allowance is 7*l.* 12*s.* 6*d.* a year each.

The pensioners are all provided with cloaths, diet, washing, lodging, and firing; and have a weekly allowance of 8*d.* for their pocket-money.

The qualifications required to be admitted of this body, are, that the candidate bring a certificate from his superior officer that he has been maimed or disabled in the service of the crown; or that he has served the crown twenty years, which must be made appear by muster-rolls.

To defray the charges of this hospital, there is a considerable sum paid yearly out of the poundage of the army; beside one day's pay of each officer, and each common soldier, every year, which, in time of war, amounts to a very considerable sum. In case of a deficiency, it is supplied by parliament.

For the administration of this hospital there are commissioners, a governor, whose salary is 500*l.* *per annum*, a lieutenant-governor with 400*l.*, a major with 270*l.*, an adjutant with 100*l.*, two chaplains with 100*l.* a-year each, a physician and surgeon, whose salaries are 100*l.* a-year each, besides surgeoons mates and apothecary, a treasurer, who is the pay-master-general of the land-forces for the time being; and his deputy and clerk, secretary and register and clerks, agent and pay-master to the out-pensioners and his clerks, comptroller, steward, house-keeper, organist, clerk of the works, &c. &c.

HOSPITAL, or Corporation, Scots, a charitable institution which commenced in 1665 by the voluntary association of respectable merchants, tradesmen and others, and which obtained a charter of incorporation by letters patent under the great seal of England, bearing date the 30th of June 1665. By these, the persons described in the charter were empowered to erect an hospital in the city and liberty of Westminster, for the maintenance of old or decayed artificers of the Scottish nation, and for training up their children to handicraft employments. In 1673 this corporation was enabled to erect a hall, with six adjoining tenements, for fulfilling the purpose of the charity, in Blackfriars. Afterwards it became necessary to apply to the crown for an enlargement of the numbers, powers, and privileges of the corporation. Accordingly new letters patent were issued, bearing date the 16th of November, 1676, by which 33 assistants were added to the former eight governors; liberty was granted to establish their hospital either in London or Westminster; and they were empowered to purchase and to hold lands to the yearly value of 500*l.*, by the name and style of "The Master, Governors, and Assistants of the Scottish Hospital, of the Foundation of king Charles II." The design of an hospital, however, was afterwards abandoned; and in its place was substituted the wiser mode of assisting and relieving the poor objects at their own habitations. The charter of 1676 having been found insufficient by its provisions to render the institution sufficiently extensive in its beneficial effect, application was made to his present majesty for a new charter of incorporation, which was obtained, bearing date the 28th of November, 1775; by which the corporation is

re-established under the ancient name and style of "The Scottish Hospital of the Foundation of Charles II.;" and the government vested in a president, six vice-presidents and a treasurer, to be elected annually on St. Andrew's day, or the day after, and the number of governors left unlimited. A committee is also chosen on the same day, consisting of 20 governors, beside the president, vice-presidents, and treasurer, who are of the committee, for conducting the affairs of the corporation. The officers of the society are a chaplain and secretary. By the charter there must be five general courts held every year; and the committee meet on the second Wednesday in every month, at the hall of the corporation in Crane-court, Fleet-street, to receive the petitions of the patients recommended by the governors, and in order to distribute the charity. A donation of 10 guineas constitutes a governor for life; and a subscription of one guinea or upwards, annually, qualifies to be an annual governor. In conformity to a bye-law, it is the practice, in order to form a capital, to invest, in some one of the public funds, one-half of every donation of 10 guineas and upwards to 20, and the whole of every donation of this last amount, or beyond it. The annual subscriptions, and a moiety of the lower donations, are applied towards the regular monthly expenditure. Every governor, whether annual or for life, has the privilege of recommending one, and only one, distressed object for relief. This institution may be justly denominated an "Hospital of Out-Patients;" the objects of it being supported and relieved by weekly, monthly, or quarterly allowances in money, and with medical assistance and advice at their own habitations; and such of them as are desirous of returning to their native country for the benefit of their health, or to spend the remainder of their days with their relations and friends, have their passages by sea paid, and money advanced to supply their immediate wants, by which they have not only the benefit of an hospital and work-house, without the disagreeable circumstances attending them, but all the comforts of their families and friends reserved for them.

The number of poor, lame, and sickly persons relieved, and passages to Scotland paid for, by the hospital, annually for five years, have been as follows:

| | |
|---------------------------------------|--------|
| For the year 1803 to St. Andrew's day | - 1418 |
| For ——— 1804 - to do. | - 1598 |
| For ——— 1805 - to do. | - 1258 |
| For ——— 1806 - to do. | - 1610 |
| For ——— 1807 - to do. | - 1602 |

HOSPITAL, Small-Pox, or hospital for relieving poor people afflicted with the small-pox and for inoculation, was instituted by voluntary subscription in the year 1746. The object met with very general encouragement, and several houses remotely situated from one another, were engaged in subserviency to the design. This hospital afterwards consisted of two houses, at a due distance from each other, in airy situations. A house for preparing patients for inoculation was erected at Pancras, and that for receiving them when the disease appears, and for accommodating patients who have it in the natural way, was then in Cold-bath fields. The new building at Battle-bridge St. Pancras, was finished and opened at Michaelmas 1767, for the reception of patients before inoculation. The whole expence of the building, and its accidental charges, amounted to 895*l.* 19*s.* 1*d.* In December 1767 there were 300 patients for inoculation in the hospital. The hospital in Cold-bath fields requiring a general repair, and the governors being possessed of freehold ground at Pancras, on which the inoculation hospital stood, and where they had sufficient room for a new building, determined to erect a new edifice in the room of the other, which needed repair. Accordingly in

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1792 a plan was obtained, and a special committee was appointed to conduct the business. It was actually begun in May 1793, and completely finished in June 1794, and the patients were removed into it in under the direction of the medical officers. The whole subscription for this purpose amounted to 397*l.* 18*s.* 8*d.*; and the building charges amounted to 761*l.* 3*s.* 2*d.* beyond that sum. A new set of rules was framed, and one apothecary and one matron were constituted to take the direction of both houses, under the superintendance of the physician. Soon after the practice of vaccination became prevalent, Dr. Woodville, physician of the hospital, first introduced it Jan. 21st, 1799, and adopted it very generally during the following year, thus greatly assisting Dr. Jenner in his researches and experiments; and in the space of three years from that time, 9000 were vaccinated, without any complaint of unsuccessful practice. In 1801, their number increased to 11,800, of whom 2500 were afterwards tested by variolous inoculation; and the progress was so rapid that 4290 were vaccinated in 11 months. In 1802 the number of vaccinated patients had increased to 13,715; and no failure of success appeared. After this time the new practice seems to have declined in reputation, for in the following year only 2802 were vaccinated at the hospital. In 1806, Dr. Adams having succeeded the deceased Dr. Woodville in the office of physician, vaccination was slowly recovering from its depression, and from the monthly tables of the hospital in 1805 it appeared, that the in and out-patients vaccinated amounted to 2096, and those of variolous inoculation to 2638. In 1807 vaccination further declined; but there was no fatality in the hospital in the natural disease during five months. From the report communicated by Dr. Adams to the college of physicians, it appears, that 20,324 had been vaccinated by the institution since its commencement in 1799, of whom only 18 had afterwards taken the small-pox casually; and that three years were the critical period at which the greater part of them had taken it. The prejudice, however, against vaccination prevailed. During the year 1808, the patients relieved in the casual small-pox amounted to 132, those for inoculation to 1296, and those of vaccination to 1252; and the total number of these, since 1799, amounted to 23,197; of casual patients, since the first establishment, 21,868, and of variolated patients to 47,471; making together 92,536. Dr. Lettsom states, in favour of vaccination, that not more than four have died in 60 thousand vaccinated patients. (See *Cow-pox*.)

This society is supported without charter by voluntary contribution; their property consists of the freehold estate at Pancras, containing four acres of land; 8000*l.* in reduced bank annuities, and 9000*l.* consols, and 38*l.* 7*s.* 2*d.* imperial annuities. The receipts generally amount to about 1400*l.* per annum, and the expences generally exceed that sum. The king is the patron of this hospital; and the establishment is governed and conducted by a president, six vice-presidents, a treasurer, physician, secretary, resident surgeon and apothecary, and matron, a house committee of 13 governors, and a committee of seven auditors, chosen annually. Thirty guineas constitute a governor, and five guineas an annual subscriber; and any double subscription gives a double privilege. Smaller sums are gratefully received, but give no privilege. Every governor may recommend one patient into each house at a time. Two half-yearly courts are held before Midsummer and Christmas. The house-committee of 13 meet on the first Thursday in every month to manage the whole concerns of the institution. The physician prescribes, inoculates, and takes the general oversight and direction of the family; the secretary receives

legacies, donations, subscriptions, &c. and keeps all the accounts and minutes, &c.; the apothecary, who is also a steward, is resident at the hospital, and keeps an accurate register of the medical transactions, assists the matron respecting the provisions and household direction, and attends all the committees; the matron's office comprehends every thing which is commonly included in that of mistress of a family. No officer can receive any fee on pain of dismissal. Both hospitals are plain brick buildings, that for inoculation and the other for the natural small-pox, being contiguous, but entirely distinct from one another, and communicating only by a covered passage. The airiness of the situation, and the cleanliness which is preserved through both hospitals, and the good order maintained by the vigilance of the resident surgeon and the assiduous attention of the matron, render these hospitals well deserving the notice of every friend to humanity.

HOSPITAL, *Sutton's*. See CHARTREUSE.

HOSPITAL, *St. Thomas's*, in Southwark, is established for the same purposes as that of St. Bartholomew.

It was originally founded an hospital by Richard, prior of Bermondsey in 1213, and surrendered to king Henry VIII. in 1538; in the year 1551, the mayor and citizens of London, having purchased of king Edward VI. the manor of Southwark, including this hospital, repaired and enlarged it, and admitted into it 260 poor, sick and helpless objects; upon which the king, in 1553, incorporated it together with those of Christ, Bridewell, Bethlem, and St. Bartholomew. This ancient structure, much damaged by time and by fire, was rebuilt by voluntary subscription in the year 1693; and by additional buildings greatly enlarged; in consequence of which it consisted of three beautiful squares; to which the governors, in 1732, added a magnificent new building, consisting of several wards, a brew-house, and other necessary offices, at their own expence. It now consists of four quadrangular courts; in the first are wards for women; in the second two chapels, the lesser for the private use of the hospital, and the larger parochial; in the same court and adjoining to it, are the houses of the treasurer, and other officers; in the third court are several wards for men; the fourth hath also wards, hot and cold baths, a surgery, theatre, apothecary's shop, &c. The number of in and out patients relieved by this hospital, at an average of six or seven years, may be stated at 9000, at an expence of about 10,000*l.* Those of the last year appear by the report of 1811 to have been 8318. The governors of this hospital are the lord mayor and court of aldermen, and the number of others, who, on receiving a governor's staff, give a benefaction of 50*l.* or upwards, is unlimited; but it is commonly between four and five hundred. They choose their officers and servants, who are; a president, treasurer, hospitaller or chaplain, besides the minister of the parish, who is paid by the hospital, three physicians, three surgeons, apothecary, clerk, receiver, steward, matron, butler, and brewer, baker, cook, assistant and servant, an assistant clerk in the compting-house, two porters, four beadles, nineteen filters, nineteen nurses, nineteen watch-women, a chapel-clerk and sexton, and one watchman. The house contains eighteen wards, and about 485 beds.

HOSPITAL, *Westminster*, or *Public Infirmary*, was instituted in the year 1719, at the expence, and by the contribution of several benevolent individuals, "for the relief of the sick and needy from all parts." The patient is admitted by a recommendation signed by any governor, cases of accident excepted, which are admitted without recommendation at all hours of the day or night; and several beds are reserved for them. A benefaction of 30*l.* or upwards, or of three

guineas or more per annum, qualifies the donor to become a trustee. A board of trustees meets every Wednesday morning to transact the affairs of the charity; and four quarterly general boards are held for the supervision of its concerns. The capital of this hospital consists in several funds of 11,500*l.* 15*s.* 4*d.* three per cents. The inalienable capital for the incurables amounts to 21,368*l.* 18*s.* 1*d.* in several funds of three per cent., and the maintenance, cloathing, and medicines are charged at 20*s.* per week, which does not exhaust more than one-third of the income appropriated for them. The queen is the patroness of this hospital; and it is under the direction of a president, nine vice-presidents, a treasurer, a secretary and receiver, three physicians, three surgeons, and an assistant surgeon.

Besides the hospitals already enumerated, there are royal hospitals, such as that at Haslar, near Portsmouth, for sick and hurt seamen and marines, and the royal hospital at Plymouth, and many others, supported by the benefactions of private and voluntary contributors, which provide relief for almost every species of disease or injury. For a particular account of all hospitals in London, and all public charities and benevolent establishments, for the relief and instruction of the poor; see a work, the result of much investigation and labour, and written with the most laudable design by A. Highmore, esq. 1809, entitled, "Pietas Londinensis; or the History, Design, and Present State of the various Public Charities in and near London."

HOSPITALS, *Camp*, are either general or regimental.

The general hospitals are of two kinds, *viz.* the *flying* hospital, attending the camp at some convenient distance, and the *stationary* hospital, which is fixed to one place. In the choice of both, it will be better to have them in towns than villages, as the former will afford larger wards, besides more of other conveniences; these wards should be as airy as possible.

As to the disposition of hospitals, in regard to preserving the purity of the air, the best rule is to admit but few patients into each ward. It will also be found a good expedient, when the ciellings are low, to remove some part of them, and to open the garret-story. The doors and windows may likewise be opened, and ventilators used to purify the air of every ward. In winter-hospitals, the wards are to be warmed with chimnies, and never by stoves; for though the latter may warm a large ward better, and at a less expence, yet by scarce making any draught of air, they will be apt to increase its putrid quality; whereas a fire, kept up in a chimney, acts like a constant ventilator.

The *general* hospital should receive only such sick as the regimental ones cannot conveniently contain, together with those who cannot be removed with the army. Without this dispersion of the sick, the general hospital, in bad seasons, would have a greater number than could be well attended; and what is equally, if not more pernicious, it would be too much crowded, by which means the contagion would spread, and the mortality be rendered more general.

Regimental hospitals are of the greatest importance, and therefore should be supplied with blankets and medicines from the public stores, with an allowance also for nurses and other necessaries. Nor are they to be maintained in the field only, but also in winter-quarters, as there will always be a great many more sick than can be taken care of in the general hospital.

Barns, stables, granaries, and other out-houses, but above all, churches, make the best hospitals, from the beginning of June to October; for as the greatest danger arises from foul air, which cannot be compensated by diet or medicine, we may lay it down as a rule, that the more airy and large the hospitals are, the less danger there is of the sickness

spreading. Pringle Observ. on the Diseases of the Army, p. 104, seq.

HOSPITAL, *Fever*, in *Medicine*. See FEVER and TYPHUS.

HOSPITAL *Ship*. See SHIP.

HOSPITAL, in *Geography*, an island in the river St. Lawrence, Upper Canada, in front of the township of Edwardburgh, containing about 100 acres.

HOSPITALER, one that entertains and provides for poor people, travellers, &c.

The appellation is chiefly given to certain communities of religious; as, the hospitalers of Ellefort in Essex, instituted to take care of lepers; hospitalers of St. John Baptist, of Coventry; hospitalers of St. Julian; hospitalers of St. Leonard, at York, &c.

The religious hospitalers generally follow the rule of St. Augustine. Most of them pretend, that St. Martha was their first foundress, and chose her for their patron, because she entertained Jesus Christ at her house. Some of them go back to the patriarch Abraham for their founder.

There are also hospitalers among the military orders; such as the knights of St. Lazarus, and St. John of Jerusalem.

HOSPITALERS, *Hospitalarii*, more particularly denote an order of religious knights, who built an hospital at Jerusalem, wherein pilgrims were received. To these pope Clement V. transferred the effects and revenues of the Templars; whom, by a council held at Vienne, he suppressed, for their many and great misdemeanors.

These hospitalers were otherwise called *Knights of St. John of Jerusalem*; and are the same with those whom we now call the *Knights of Malta*.

HOSPITALER, in *Mythology*, is a name which the ancient Romans gave to Jupiter, calling him Jupiter Hospes, because they considered him as the guardian of hospitality.

HOSPITIUM, INN; a term peculiarly used, in our law-books, for an inn of court.

HOSPITIUM is also used for a little convent, which the religious built for the reception of strangers and travellers of the same order, who had occasion to stay with them some time.

Most of these hospitia, or inns, in time became fixed convents.

In the middle ages there seem to have been no inns or houses of entertainment for the reception of travellers; and this circumstance affords a proof that little intercourse subsisted between different nations. And as hospitality is a virtue of the first rank among people whose manners are simple, and who are seldom visited by strangers, it was considered at the period to which we now refer as a very important and indispensable virtue; and not as one of those virtues which men may practise or not, according to the temper of their minds, and the generosity of their hearts. Hospitality was enforced by statutes, and those who neglected this duty were liable to punishment. "Quicumque hospiti venienti lectum, aut focum negaverit, trium solidorum in latrone mulctetur, Leg. Burgund. tit. 38. § 1. Si quis homini aliquo pergenti in itinere mansionem veterit sexaginta solidos componet in publico." Capitul. l. vi. § 82. The laws of the Slavi were still more rigorous; they ordained "that the moveables of an inhospitable person should be confiscated, and his house burnt." They were even so solicitous for the entertainment of strangers, that they permitted the landlord to steal for the support of his guest. "Quod noctu furatus fueris, cras appone, hospitibus." Rerum Meclenburg, l. viii. a Mat. Jo. Beehr. Lips. 1751, p. 50. In consequence of these laws, or of that state of

society which made it proper to enact them, hospitality abounded while the intercourse among men was inconsiderable, and secured the stranger a kind reception under every roof where he chose to take shelter. As the intercourse among men increased, that which was a pleasure became a burden, and the entertaining of travellers was converted into a branch of commerce.

HOSPITIUM was likewise formerly used for procuration, or visitation money. See PROCURATION.

HOSPODAR, the title borne by the prince of Walachia and Moldavia.

The Hospodars of Walachia and Moldavia receive the investiture of those principalities from the grand seignior, by a vest, and a standard which he gives them.

They are sometimes deposed by him; though in other respects they have sovereign power within their states.

HOSSAINPORUM, in *Geography*, a principal town of Cotwally, in Bengal; 50 miles N. of Moorshedabad. N. lat. $24^{\circ} 57'$. E. long. $88^{\circ} 7'$.

HOSSAINPOUR, a town of Hindoostan, in Oude; 40 miles N.N.E. of Manickpour.

HOSSAMALLY, a town of Hindoostan, in Guzerat; 25 miles S. of Amedabad.

HOSSAREE, a town of Hindoostan, in Canara; 10 miles E.N.E. of Barcelore.

HOSSEFIN, or LONGROSSON, a town of Arabia, in the province of Oman, on the E. coast; 30 miles N.N.W. of Sohar. N. lat. $24^{\circ} 40'$.

HOST, HOSPIES, which some will have thus called, *quasi hospitium*, or *ostium petens*; for *ostium* was anciently written with an aspirate; a term of mutual relation applied both to a person who lodges and entertains another, and to the person thus lodged, &c.

Thus the innkeeper says, he has a good host, in speaking of the traveller who lodges with him; and the traveller again says, he has a kind host, in speaking of his landlord. It must be observed, then, that it was the custom among the ancients, when any stranger asked for lodgings, for the master of the house, and the stranger, each of them to set a foot on each side of the threshold, and swear they would neither of them do any harm to the other. It was this ceremony that raised so much horror against those who violated the law or right of hospitality on either side; inasmuch as they were looked on as perjured. Instead of hospes the ancient Latins called it *hospis*, as Cicero himself informs us; though, in course of time, *hospis* came to signify an *enemy*; so much was the notion of hospitality altered.

Host is also used by way of abbreviation for *hospitia*, a victim, or sacrifice, offered to the Deity.

In this sense, host is more immediately understood of the person of the word incarnate, who was offered up a host, or *hospitia*, to the Father on the cross, for the sins of mankind.

Host, or *Hostia*, is chiefly used, in the Romish church, for the body of Jesus Christ, contained under the species of bread and wine, which is offered up every day, a new host, or sacrifice in the mass.

Pope Gregory IX. first decreed a bell to be rung, as the signal for the people to betake themselves to the adoration of the host.

The vessels wherein the hosts are kept is called the *cibory*; being a large kind of covered chalice.

HOSTAGE, formed of *host*, and that of *hospes*, a person left as surety for the performance of the articles of a treaty.

When two enemies are on the point of concluding a treaty,

or capitulation, it is frequent for them to give hostages on each side, as sureties for the execution of what is contained therein.

An hostage is either a principal, or an accessory, according to the state of the case. He is only an accessory, when, for instance, a prince promises fidelity to another, and gives up his son, or some other great lord, to assure his engagement, without any farther stipulation. For here, if the prince fail of his word, the hostage is no ways accountable for it.

But the hostage becomes a principal, when it is expressly stipulated, that he shall be answerable for the event: for instance, if a city engage to surrender, in case it be not relieved in so many days, and to secure the engagement, give hostages, these hostages are what a surety is to a creditor for the debt of his principal. So that if the relief do not come, and yet the citizens refuse to surrender, the hostages stand in their places, become principals, and are liable to be punished for the prevarication of those they are become sureties for.

A hostage given for another person becomes free when that person dies.

HOSTANA, in *Geography*, a town of Istria; 6 miles N. of Rovigno.

HOSTAUN, a town of Bohemia, in the circle of Pilsen; 9 miles N.W. of Teinitz.

HOSTE, or L'HOSTE, JOHN, in *Biography*, who flourished in the former part of the seventeenth century, was born at Nancy, in Lorraine. He was some time professor of civil and canon law in the university of Pont-à-Mousson; and afterwards occupied the mathematical chair. His talents and industry recommended him to the notice and favour of Henry, duke of Lorraine, who appointed him to the posts of intendant of fortifications, principal engineer, and counsellor of war. He was author of many valuable works connected with his profession, of which the following are the principal: "Le Sommaire et l'Usage de la Sphere Artificielle;" "Description et Usage des principaux Instrumens de Geometrie;" "Du Cadran et Quarrè." He died in the year 1631. Moreri.

HOSTE, or L'HOSTE, PAUL, was born at Pont-de-Veal, in France, in the year 1652. He entered into the order of the Jesuits in 1669, and afterwards took several voyages with the marshals D'Éstrées and De Tourville, and the duke de Mortemart, whom he accompanied, for twelve years, in their naval expeditions. He distinguished himself by his great skill in mathematics, and became professor of those sciences at Toulon, where he died in 1709. He was author of 1. "Traité des Evolutions Navales," folio, 1697. 2. "Traité de Mathématique les plus nécessaire à un Officier," 3 toms. 12mo. The treatise on naval evolutions was enlarged and reprinted in 1727; it is historical as well as didactic, and contains an account of the principal naval transactions during fifty years preceding the time of its first publication, illustrated with four hundred copper-plate engravings. Annexed to it is a treatise "On the Construction of Ships." Moreri.

HOSTEA, in *Botany*, was so called by professor Willdenow, in compliment to the highly meritorious Dr. Nicholas Thomas Host, author of a *Synopsis Plantarum in Austria crescentium*, octavo; and of a most superb work in three volumes, folio, with coloured plates in the style of Jacquin's publications, entitled *Gramina Austriaca*. Professor Jacquin has called a plant *Hostia*, with the same intention, in his *Hortus Schoenbrunnensis*, v. 1. 60. t. 114, which appears to us the *Cornutia pyramidata* of Linnæus, notwithstanding the doubts and objections of Jacquin, and the disagreement of its fruit with

the descriptions of Plumier and Linnæus, which last seem to us erroneous. (See CORNUTIA.) The fruit of the Linnæan specimens at least exactly agrees with Jacquin's figure, as to the number of cells and seeds. The *Hoflea* of Willdenow, *Sp. Pl.* v. 1. 1274, is however the *Matelea* of Aublet, *Guian.* t. 1. 277. t. 109, under which appellation it is described by Mr. Brown in his *Asclepiadææ*, 25; and though this name has received no explanation, and appears to be barbarous, it is sufficiently harmonious, and in compliance with a writer who has treated his subject so well as Mr. Brown, may perhaps be admissible. See *MATELEA*.

HOSTEL, or **HOTEL**, a French term, anciently signifying a house or dwelling-place.

It is now more commonly used for the palaces or houses of the king, princes, and great lords.

In this sense they say, the *hotel de Condé*, *hotel de Conti*, *hotel de Louvre*, &c.

The grand prévôt de l'hôtel was the first judge of the officers of the king's household, his jurisdiction was much like that of lord-steward of the household of the king of England.

The *hotel de ville* is what we call a *town-house*, or *town-hall*. *Hotel-dieu*, is a common name for the chief hospital for the reception of sick persons, in most of the cities of France. The *Hotel de Mars* is a hospital near Paris; of the same nature with Chelsea hospital.

HOSTEREN, in *Geography*, a small island in the N. sea, near the coast of Norway. N. lat. 60°.

HOSTERLITZ, a town of Moravia, in the circle of Znaim; 12 miles N.E. of Znaim.

HOSTIA, **HOST**, in *Antiquity*, a victim offered in sacrifice to a deity.

The word is formed from *hostis*, *enemy*; it being the custom to offer up a sacrifice before they joined battle, to render the gods propitious; or, after the battle was over, to give them thanks. Some choose to derive the word from *hostis*, q. d. *ferio*, *I strike*. Isidore on this word remarks, that the name *hostia* was given to those sacrifices which they offered before they marched to attack an enemy; *Antequam*, says he, *ad hostem pergerent*, in contradistinction from *victims*, which were properly those offered after the victory. Ovid seems to distinguish otherwise, when he says,

“ *Victima quæ cecidit dextra victrix, vocatur;
Hostibus a domitis hostia nomen habet.*”

As if the *hostia* might be slain by any priest, but the victim only by the hands of the victor. Fronton makes another distinction: according to him, *victima* was a grand oblation, and *hostia* a smaller and less considerable one.

HOSTILINA, in *Mythology*, a goddess adored among the Romans, and invoked particularly for the fertility of the earth.

HOSTILITY, the action of an enemy. During a truce, all hostilities are to cease on both sides: such a city stands neuter, and commits no hostilities on either side.

The word is Latin, *hostilitas*, formed of the primitive *hostis*, which signifies *enemy*, and which anciently signified *stranger*, *hostes*.

HOSTILLERS, in our *Old Writers*, is used for innkeepers; and in some old books the word *hostlers* is taken in the same sense. 3 Ed. III. cap. 2.

The word is French, *hosteliers*, of the same import.

HOSTIS, in *Antiquity*. See *BISHOP*.

HOSTOMITZ, in *Geography*, a town of Bohemia, in the circle of Beraun; six miles S.E. of Beraun. N. lat. 49° 51'. E. long. 14° 11'.

HOSTORP, a town of Sweden, in the province of Skåne; 10 miles N.W. of Lund.

HOT-BATH. See *BATH* and *TIERME*.

HOT-BED, in *Gardening*, a name given to a sort of bed constructed for the purpose of producing artificial heat, and the raising of different sorts of culinary and other vegetables and plants.

In this view these beds are mostly formed either of horse-dung or tanner's-bark, being raised two, three, or four feet high, and covered with garden-frames and glasses, &c. And in some cases the dung and bark are mixed or blended together.

It is chiefly by the aid of these beds also that various tender plants, flowers, and fruits, are raised in perfection, which, without such artificial heat, could not possibly be produced or continued in this climate. By this means, likewise, vast numbers of seeds, which would otherwise remain years in the earth, and some never grow at all, are made to generate, form plants, continue their growth, and produce their flowers and fruits as in their native soils. And the cuttings and slips of many sorts of trees and shrubs, which would otherwise remain inactive and perish, are also made soon to emit root-fibres and shoots, and become plants in due time.

By this means, too, many valuable esculent plants, that succeed in the full ground at one time of the year or other, are brought to perfection much sooner than they could otherwise be obtained, as the cucumber, asparagus, peas, beans, kidney-beans, radishes, carrots, strawberries, and various salad herbs, and other plants, which grow in the open ground of the garden departments.

And annual flowering plants, as well as those of the herbaceous and shrubby kinds, are also brought to more early perfection and flowering by them. They are therefore of great use in the practice of gardening, in numerous cases of forcing early productions.

Making Dung Hot-beds.—The proper situations for making these sorts of beds in are the forcing-ground, or other sheltered, warm, sunny exposures, either in or contiguous to the garden ground.

The hot-beds are sometimes made entirely on level ground, and sometimes in a trench or oblong cavity formed in the ground, the width and length of the intended bed, and from twelve inches to a foot and a half deep or more; but for early work in the winter or spring seasons, they should be mostly above ground, upon the level or rather elevated surface, that the bottom of the bed may stand dry, and not be liable to be chilled by wet, as, when made in this way in those seasons when the heat declines, both sides of the bed may be lined with hot dung quite to the bottom, so as the whole may have an equal benefit of the lining to revive its declining heat, which is essentially necessary during winter and spring, until the middle or latter end of May. But when hot-beds are made in trenches at an early season, where linings must be added to support a constant regular heat, all that part of the beds within the ground is deprived of the advantage of them. These beds are sometimes also enclosed by brick masonry, which is surrounded by hot dung on the outside. This is M^r Phail's mode of early forcing.

With respect to the forms and dimensions of dung hot-beds, they should generally be those of long squares, ranging nearly east and west, to any length that may be convenient; about four feet and a half in breadth, if to be covered with common garden-frames; and three and a half or four feet if for hand-glasses; raising them, if in winter, or early in spring, three or four feet or more in height, allowing for setting;

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ling; as they will settle half a foot or more in the course of a week or two after making them.

The more early beds should be substantial, otherwise they will not support a durable uniform temperature of heat for continuing the plants in a regular free growth; which, by the aid of linings, must be effected till the arrival of warm weather. Those made in winter should be three feet and a half in height at least, when first made; or if four, so much the better; in March a yard in height, in April the same, or two feet and a half; and in May two feet or a little more, as without due substance they never answer well.

These beds may be made for a one-light, a two-light, or even a three-light frame; and for two, three, or more, three-light frames in a range, according to circumstances and the nature of the forcing to be done.

Manner of Forming the Beds.—After properly marking them out, some of the longest or moist strawy dung should be shaken along the bottom, to begin the bed with; then the long and short together as it comes to hand, shaking it evenly in every part, raising the sides perfectly upright, straight, and firm as possible; forming the corners also full and very firm, keeping the middle well filled with the best dung; and, as the work advances, beating each layer of dung evenly and firmly down with the dung-fork; or, when it is very long, loose, strawy dung, treading it in to settle every part equally; proceeding in this manner till the bed is arrived to its designed height, raising that part intended for frames two or three inches higher in the back or north side than in front, to give the greater slope to the glasses to the sun, finishing the top even in every part; and when the bed is thus raised, trimming up all the short dung remaining at last round the bed, laying it on the top ridge-ways along the middle, which may either then, or rather, if a strong bed, in a few days afterwards, when the bed has settled a little, be levelled, to make good all inequalities, and smooth the surface. After this set the frames, &c. on, and earth the bed as directed below. See **FRAME** and **HAND GLASSES**.

The hot-bed being thus formed, when of considerable substance, it may be advisable to defer the framing and earthing it finally for several days, or even a week or more according to the strength of the bed, until it is a little settled, and the first violent heat has subsided; as the heat will be very strong, and frequently of a burning nature, for the first week or two after it is made. It may, however, often be proper to set the frames and glasses on, to defend the beds from excessive rains or snow, as well as to draw up the heat sooner, to form the bed to a proper temperature for the reception of the mould, and seeds or plants. The upper ends of the lights should be raised a hand's breadth high, or be shoved so much down in dry weather, that the great steam arising from the bed may pass freely off; as in strong hot-beds neither the earth, seed, nor plants, should be put in till the fierce heat and violent steam have a little abated. Hot-beds of slender substance may, however, be framed, earthed, &c. as soon as made, as no great danger is to be apprehended from burning, and more particularly those for small frames, hand-glasses, &c.

Where, in this mode of forcing, there is an extensive range of substantial hot-beds, the placing of the frames on them before they are fixed for good, is often inconvenient; in which case it is proper to have mats, or dry long litter ready to cover the tops in case of excessive rains or snow, which might chill and retard the beds greatly from becoming of a due temperature for the reception of the earth, &c. and sometimes occasion them to become of a burning description,

when they otherwise would be of only a regular heat and temperature for the purposes for which they are designed.

But in hot-beds designed for strength and duration, it will, as soon as they are made, be proper to provide some sharp pointed sticks, two feet long, to thrust down into the middle of the beds in different parts, that by pulling them out daily, and feeling their lower parts, a judgment may be formed of the working and temperature of the beds, and when in a proper state for the reception of the mould and plants.

Where the hot-bed is therefore of good substance, and for the large frames, it is proper to let it remain some days to settle, before it is framed for good, because, notwithstanding all the care in making, it will often settle unequally; and it should be levelled before it is earthed; in from about three to five, six, or eight days, according to the nature of the dung, or substance of the bed, it will have so far settled as to discover the inequalities, if any; when, if the frames and glasses were placed thereon, for the purposes above-mentioned, when the whole has settled, all the inequalities should be made even, by levelling the top, making the surface firm, and smoothing it off neatly with the back of the spade. Then the frame and glasses should be put on for good, opening the lights a little at top to give vent to the steam and rank heat.

Mode of Earthing the Beds.—As strong substantial dung hot-beds, after being covered with the frames, &c. sometimes heat violently the first week or fortnight; when the earth is put in during the fierce heat, by confining that and steam still more closely it is in danger of being burnt, and also of destroying the seed and roots of the plants, if any were sown or planted. When the earth is thus burnt by the heat of the dung, no seeds or plants can vegetate or thrive in it; it must therefore be taken out and replaced by fresh compost. Hot-beds of such considerable substance should of course be examined previously to moulding them, to ascertain the state of heat daily, by the sticks, and thrusting the hand into the dung. And when it is found of a due temperature, the mould should be put on. This is sometimes shewn to be the case by the appearance of a sort of mushroom spawn upon the more superficial parts.

But in slender hot-beds, as their heat is never so violent or durable, they may either be earthed as soon as made, or in two, three, or four days afterwards, as may be judged proper. In all cases care should, however, be taken that the beds do not lose any time for them to waste their heat ineffectually, without being earthed and properly prepared for the reception of the plants.

And for all sorts of hot-beds, the earth or mould should be rich, light, and of a dry quality, particularly for early work in winter and spring, and tender plants, such as cucumbers, melons, tender annuals, &c. as very moist earth rots such plants while young, binds too closely, and by its compactness confines the heat and steam, so as often to burn at bottom, and scorch the roots of the plants. Some light mould should therefore always be in readiness in some airy shed, for two or three weeks before it is wanted for this use. See **COMPOST**.

In regard to the depth of earth or mould which is necessary to be applied over hot-beds, it must be different according to the purposes for which they are designed, as for sowing seed on, or the reception of plants, and the nature of the plants, or chiefly for plunging pots in. In general, however, from about five or six, to ten or twelve inches, is the common depth. For sowing seeds to raise plants for transplantation, the depth of mould should be about six inches; and where they are to remain to acquire their full growth,

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not less than from six or eight to ten or twelve inches in depth. If for the immediate reception of plants to remain, or for striking cuttings of any sort in, &c. from six to eight, ten, or more inches of mould will be necessary, regulating the whole in some proportion to the nature or growth of the plants, and the substance of the beds. Thus, cucumbers and melons, which are not only extensive growers, but produce large fruit that requires much nourishment, need a greater depth of mould than small salad-herbs, &c. which only stand in need of a slight covering.

In the business of earthing the beds, every part of the dung within the frame should be carefully covered over, especially after the plants are come up, or any planted in them, that no steam may rise immediately from the dung upon them, and thereby prove injurious or destructive to them.

With regard to the sowing or planting seeds or plants in hot-beds of strong substance, under frames, care should constantly be taken not to do it till the danger of burning is over, unless performed in pots, that may be removed up as occasion requires; and at any rate, it is always better to wait a day or two, than to endanger the plants; time should not, however, be lost when the bed is ready, as it is necessary always to have a lively heat at first, to promote a quick germination in the seeds, or to strike and set the plants forward, so as to assume a free growth at first when they appear at the surface of the beds.

And in the management of hot-beds after being sown or planted, it must often be different, according as the different plants may require. In general, however, after the seeds or plants have been put in, the glasses are to be constantly continued on until the middle of summer, when the weather is become settled and warm, particularly for all the tender kinds of plants; fresh air being admitted daily, at all opportunities, in mild weather, by raising the upper ends of the lights; or, if hand-glasses, by propping up one side, from about half an inch to two or three inches high, according to the heat and steam in the bed, and temperature of the outward air, shutting all close in due time towards evening, and keeping them close every night during the cold weather, covering the glasses every night with mats until June, especially for the more tender sort of plants, flowers, &c.

As soon as the heat of the beds naturally declines or becomes of a weakly temperature, it must be renewed by adding fresh hot dung around the sides, which is called *lining* the bed, and is particularly necessary for all dung hot-beds, made any time in winter or spring, as already noticed. See **LININGS**.

And sometimes a repetition of new linings is required three or four times, especially for those made in winter, to continue them in an uniform heat; these linings should be made of the hottest dung, and be applied quite from the bottom to the top of the bed, and about fifteen or eighteen inches wide at bottom, drawing them into about a foot wide at top, raising them four or five inches up the frame to allow for settling, but not more; for the tops of the linings, when settled, should be but very little above the bottom of the frame, lest their heat burn the earth adjoining to the frame within; and to prevent steam from rising too copiously from the linings, a stratum of earth should be laid on the top two inches thick, continuing it close up to the bottom of the frame, that no steam may rise that way; for the rank steam immediately from dung, without first passing through a body of earth, is destructive to most plants. As the linings settle down lower than the tops of the bed, more fresh dung should be added, in order to preserve them of a proper height.

Forming Bark Hot-beds.—These are such hot-beds as

are formed of bark or tan, after having been used in tan-vats or pits, and which produces a regular, moderate, and steady durable heat. See **BARK** and *HOT-house*.

But hot-beds of this kind always require to be made in proper bark-pits formed for the purpose of brick-work, or post and planking, to confine the tan in its proper situation and direction. See **BARK-pit**.

In cases where there are proper conveniences of pits, in which to make the hot-beds furnished with frames and glasses suitable, they are superior in many cases to dung hot-beds, both in raising many early esculent productions, and various curious flowers to early bloom, as well as in the propagation and raising many sorts of tender exotics, from seeds, layers, cuttings, &c. In bark hot-beds early strawberries and melons may be raised, which, by the regular, moderate, and durable heat which they produce, are generally in great perfection at an early season; likewise, small early crops of dwarf-peas and kidney-beans, &c. and of flowering plants, many sorts may be forced in great perfection of early bloom, both of the bulbous, tuberous, and fibrous-rooted kinds, such as hyacinths, dwarf-tulips, jonquils, narcissuses, anemones, ranunculuses, pinks, and many other moderate growing kinds; also roses, and some other small ornamental flowering shrubs of different descriptions.

And bark hot-beds are also of great utility in hot-houses, stoves, and forcing houses, as the principal and most proper, and effectual kind of beds for these different departments of the garden. See **BARK-beds**, and *HOT-house*.

Kinds of forced Crops.—The particular sorts of crops usually raised in these hot-beds are those of cucumbers, melons, asparagus, strawberries, kidney-beans, peas, dwarf-beans, radishes, small salad-herbs, and lettuces. But various sorts of seed plants are raised and preserved in this way, such as cauliflowers, early cabbages, red cabbages, early celery plants for pricking out, carrots, small white turnip-radishes, Dutch turnips, mint, tarragon, tansey, basil, capsicums, love-apples, coriander, purslane, early dwarf potatoes, and mushrooms in beds of peculiar sorts. But those for which these beds are more absolutely necessary, are all the first sort, and basil, capsicum, love-apple, and mushrooms amongst those of the second description. See **MUSHROOM-house**.

HOT-bed, in *Agriculture*, a sort of earthy layer or stratum, under which horse and some other kinds of manure have been deposited in their more raw and imperfectly reduced conditions; by means of which a degree of heat is kept up for some length of time, and thereby vegetation brought forward, where the season or climate is not warm enough for effecting the purpose in a proper manner. This is a method of husbandry that can only be had recourse to in particular sorts of crops, such as those of potatoes and a few others, in which the sets or other seeds are capable of being put in upon littery or other hot dung in the drills or rows, by means of which a kind of hot-bed is prepared for the promotion of their growth, and the extension of their knobby, tuberous, or other roots.

HOT-bed Culture, a term applied to that kind of cultivation which in some measure approaches to that which takes place on hot beds. See **HOT-bed**.

HOT-house, in *Gardening*, a sort of garden erection, mostly formed of glass-work, in which a constant regular degree of artificial heat by fire and bark hot-beds is kept up and preserved.

The principal powers which assist in promoting the growth of vegetables, and which of course should be regarded in buildings of this nature, are those of heat, light, air, earth or soil, and water. The first of these is commonly afforded

by

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by the consumption of some sort of material as fuel, in a narrow fire-place or furnace, the heat and smoke being conveyed in a winding horizontal flue or pipe, which serves as a chimney to the different parts. This has, likewise, been occasionally done by the application of steam alone, as well as in combination with fire. This is, however, too expensive a method to be generally employed. It may be afforded also by different materials in the state of fermentation, such as dung, litter, leaves, and various other vegetable products of little value but for manure. And in particular situations it may be effected by the sun, being preserved by proper contrivances, as in the patent hot-house lately invented by Dr. Anderson, and described below. But though all these schemes may be occasionally had recourse to in particular cases, that by the consumption of fuel in furnaces and flues is the only practical method that can be generally adopted with benefit. As the principal difficulty in this business is the regulation and retention of the temperature, so as to suit the different habits and degrees of heat that are requisite for the growth of the different plants; various plans have been had recourse to in these intentions; in the latter partly by having the houses made in a great measure air-tight, and partly by the contrivance of an inner curtain, so as to be let down close under the glass during the night-time, and thereby prevent the heated air of the house from being brought in contact with it, and from escaping in any great proportion in that way. This curtain has been lately contrived by Mr. Loudon. In the former, the heat is also chiefly regulated and kept at the proper height by means of this curtain, which, as it keeps up the due temperature, does not render it necessary to have the heat raised so much in the early part of the night, in order to avoid its getting too low towards the morning. For though the house be quite air-tight, as glass from its porous nature is readily permeable by heat or cold, it must of necessity, in consequence of the ascension of the heated air to the top of the house, be continually given out to the surrounding atmosphere by the roof and sides of all glazed houses of this description. It is indeed principally on this account that such houses as have their sides of glass, are, without this sort of curtain, conducted with such trouble and difficulty.

Light is necessarily admitted by having the whole or a portion only of the roof of such houses; or all the roof and sides too, constructed with glass, in frames that have the convenience of sliding at pleasure. It is of very great importance in these buildings also, that the light should fall upon the plants, at but a small distance from the glass of their roofs, as by such means the plants are found to succeed in the most perfect manner.

Air is obviously inclosed within such houses, but is capable of being excluded, and that which is fresh admitted either in the whole or only in part, so as to be intermixed with it, by means of proper openings or apertures formed in different parts, so as to be opened or closed as there may be occasion for the due growth of the plants.

Earthy matter or soil proper for this purpose may be provided by means of inclosing a part of the surface of the ground within such houses, and putting it under a suitable state of preparation, as well as by depositing it after being properly prepared in pots or boxes made for the purpose, and which are capable of being put in any way that may be found beneficial for the plants or other things they may contain.

Water can readily be given in its state of fluidity to the plants or other crops simply by pouring it over the surface of the earth, or by the garden syringe, engine, and watering-pot, as rain; and by pouring it upon the heated flues or other

parts of the house by which it is converted into vapour, it is applied as dew, in consequence of its being deposited in fine particles as it loses its heat.

Besides these, the removal of stagnant air in these sorts of houses is of much consequence, which may in some measure be effected by affording motion to the plants by the admission of the external air in gentle currents. But as this can only be properly attempted when the air from without is nearly of the same temperature as that of the hot-house, it is plain that plants grown in such places can only have such admissions for a very small part of the year. This has led to different contrivances in order to remedy the defect, but these have hitherto been attended with but little success.

General Construction and Use.—The hot-house is used for procuring some sorts of fine fruits, such as the peach, the nectarine, the cherry, the fig, &c. also for the vine, the pine-apple, and for raising and preserving various other sorts of tender exotics from the hot parts of the world. Each of these sorts of fine fruits requires something particular in the construction of the hot-house.

Those which are intended for the peach, nectarine, cherry, and fig, &c. are in general with great propriety in cold situations constructed against walls, being made with glass on one side. But in climates that are less severe, such houses as are formed of glass on all the sides, having the trees so planted as to grow irregularly in the standard method, may be more beneficial as well as more ornamental.

For the forcing of vines, they may be of any kind of form as well as small or large, according to the season at which the trees are to be brought into fruit. But a double-roofed house, with an inner roofing, is advised by some as the most proper for general crops, as well as the most cheap in its nature.

It is usual for pines to be raised at very great expence, in consequence of the quantities of tan, leaves, and other similar substances that are necessary, and which stand in need of such frequent renewal, and cause so much labour and trouble in removing and replacing the plants, &c. in their situations. These, with the uncertainty that is naturally attendant on forcing with materials under the state of fermentation, have deterred many from attempting this sort of culture. Lately, however, plans have been suggested and put in practice, which in a great measure obviate these inconveniences, as may be seen in the section of a pinery given in the plate for this purpose.

But in the general construction of these houses, a wall of eight or ten feet in height or more, is raised behind, with a low wall in front and both ends, on which is placed upright glass-work, four, five, or six feet, and a sloping glass roof, extending from the top of the front to the back wall. Internal flues for fire-heat, in winter, are also contrived, and a capacious oblong or square pit in the bottom space, in which to have a constant bark-bed to furnish a continual regular heat at all seasons; so as in the whole to warm the inclosed internal air always to a certain proper high degree. Houses thus formed are mostly used in raising pines.

But besides the above, these houses are of great utility in forwarding many sorts of choice or desirable hardy plants, flowers, and fruits to early perfection, which being sown or planted in pots, and placed in them in winter, or early in spring, the constant heat thus produced forwards them to maturity two or three months or more before their natural season in the full ground, such as kidney-beans, strawberries, &c.; also, many sorts of flowering plants, both annuals and perennials, of moderate growth, are forwarded to early bloom; and vines planted in the outside close to the front, the stem of each introduced through a small hole above, and

the

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the internal branches trained up under the glasses, produce grapes at an early period, as in May. In hot-houses, likewise, early cucumbers may be raised in good perfection; and the feeds, cuttings, slips, &c. of many curious tender plants forwarded exceedingly in their growth by plunging the pots containing them in the bark-beds of such houses.

Situation and Form.—These houses are mostly ranged lengthways, nearly east and west, that the glasses of the front and roof may have the full influence of the sun. This is the most convenient situation for common houses, either for pines or exotic plants.

But some houses of this sort, instead of being placed in this direction, have lately been ranged directly south and north, having a sloped roof to each side like the roof of a house; also to the front or south end; both sides and the south end front being of glass. These houses are made from ten or twelve to fifteen or twenty feet wide, the length at pleasure; and from ten to twelve feet high in the middle, both sides fully head height; being formed by a brick wall all round, raised only two or three feet on both sides, and south end; but at the north end like the gable of a house. Upon the top of the side and south end walling is erected the framing for the glass-work, which is sometimes formed two or three feet upright, immediately on the top of the wall, having the sloped glass-work above; and sometimes wholly of a continued slope on both sides, immediately from the top of the side walls to that of the middle ridge. They are furnished either with one or two bark-pits; but if of any considerable width, generally with two ranging parallel, one under each slope of the top glass, separated by a two-foot path running along the middle of the house, and sometimes continued all round each pit, with flues ranged along against the inside walls; the whole terminating in an upright funnel or chimney at the north end of the building.

There are other hot-houses which are formed entirely on the square, having a ten or twelve-foot brick wall behind; that of the front, and both sides, only two or three feet high for the support of the glass-work, placed nearly upright almost the same height, and sloped above on both sides and front, which are wholly of glass. These are furnished within with bark-pits and flues, as in the other sorts.

In particular cases they are likewise made semicircular, or entirely circular, being formed with a two or three-foot brick wall supporting the glass framing, which is continued quite round; having the bark-pit also circular, and flues carried all round the inside of the walling, terminating in a chimney on the northern side of the house. However, the first forms are probably the best for general purposes.

Dimensions.—Hot-houses on these plans are made of different dimensions, according to the size of the plants they are designed to contain; but for common purposes they should be only of a moderate height, not exceeding ten or twelve to fourteen feet behind, and five or six in front: some are, however, built much more lofty behind, to admit of the taller growing exotics placed toward the back part, to grow up accordingly in a lofty stature; but the above are best adapted to the culture of pines, and other moderate growing plants, as well as for forcing in; as very lofty houses require a greater force of heat, and by the glasses being so high, the plants receive less benefit from the sun, and are apt to draw up too fast into long slender leaves and stems, as they naturally tend towards the glasses. Where the top glasses are at a moderate distance from the plants, they receive the benefit of the sun's heat more fully, which is essential in winter, and become more stalky at bottom, and assume a more robust and firm growth, particularly the pine-apple, and are thereby more capable of producing large fruit in the season.

Constructing the Flues.—After having determined on the dimensions as to length and width, the foundations of the house should be set out accordingly of brick work, allowing due width at bottom to support the flues a foot wide, wholly on the brick basis; detached an inch or two from the main walls; then setting off the back or north wall a brick and a half or two bricks thick, and the front and end walls nine inches, carrying up the back wall from ten to fourteen feet high; but those of the front and ends only from about two feet to a yard; taking care in carrying up the walls to allot a proper space for a door-way, at one or both ends, towards the back part; setting out also the furnace or fire-place of the flues in the bottom foundation, towards one end of the back wall behind, formed also of brick work, made to communicate with the lowermost flue within. But when of great length, as forty feet or more, a fire-place at each end may be necessary; or, if more convenient, may have them in the back part of the end walls, or both in the middle way of the back wall; each communicating with a separate range of flues; in either case, forming them wholly on the outside of the walls, about twelve or fourteen inches wide in the clear, but more in lengthways inward; the inner end terminating in a funnel to communicate internally with the flues, fixing an iron-barred grate at bottom to support the fuel; calculated for coal, wood, peat, turf, &c. An ash-hole should be made underneath. The mouth or fuel-door should be about ten or twelve inches square, having an iron frame and door fixed to shut with an iron latch as close as possible. The whole furnace should be raised sixteen or eighteen inches in the clear, finishing the top archways. Then continue carrying up the walls of the building regularly, and on the inside erect the flues close along the walls.

It is sometimes advantageous to have the flues a little detached from the walls, one, two, or three inches, that, by being thus distinct, the heat may arise from both sides, which will be an advantage in more effectually diffusing the whole heat internally in the house; as, when they are attached close to the walls, a very considerable portion of the heat is ineffectually lost in the part of the wall behind. In contriving the flues, they should be continued along the front and both ends, in one range at least, in this order. But it is better if they are raised as high as the outward front and end walls, in one or two ranges, one over the other. On the tops of these may be placed pots of many small plants, both of the exotic and forcing kinds, with much convenience.

Thus proceed in the construction of the flues, making them generally about a foot wide in the whole, including six or eight inches in the clear, formed with a brick work, on edge; the first lower flue should communicate with the furnace or fire-place without and be raised a little above it, to promote the draught of heat more freely, continuing it along above the internal level of the floor of the back alley or walk of the house the above width, and three bricks, on edge, deep, returning it in two or three ranges over one another, next the back wall, and in one or two along the ends, and front wall as the height may admit; each return two bricks, an edge deep, and tiled or bricked over. In the beginning of the first bottom flue a sliding iron regulator may be fixed, to use occasionally, in admitting more or less heat, being careful that the brick-work of each flue is closely jointed with the best sort of mortar for that purpose, and well pointed within, that no smoke may break out; having each return closely covered with broad square paving tiles on the brick-work; covering the uppermost flues also with broad, thick, flat tiles the whole width, all very closely laid, and jointed in mortar. The uppermost or last range of flues should terminate in an upright vent or chimney at one end of the back wall;

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wall; and where there are two separate sets of flues, there should be a chimney at each end. An iron slider in the termination of the last flue next the chimney may also be provided, to confine the heat more or less on particular occasions, as may be found necessary.

But sometimes, in very wide houses, in erecting the flues, to make all possible advantage of the fire-heat, one or more spare flues, for occasional use, is continued round the bark-pit, carried up against the surrounding wall, but detached an inch or two, to form a vacancy for the heat to come up more beneficially, and that, by having vent, it may not dry the tan of the bark-bed too much; and in the beginning a sliding iron regulator may be fixed, either to admit or exclude the heat, as expedient; so that the smoke, by running through a larger extent, may expend its heat wholly in the flues before it be discharged at the chimney. Great care must likewise be taken that neither the fire-place nor flues be carried too near any of the wood-work of the buildings.

Bark-pit.—After this work is done proceed to set out the cavity for the bark-pit, first allowing a space next the flues for an alley or walk, eighteen inches or two feet all round, and then in the middle space form the pit for the bark-bed six or seven feet wide, the length in proportion to that of the house, and a yard or more deep; inclosing it by a surrounding wall. It may either be sunk at bottom a little in the ground, raising thereabove by means of the parapet wall; or if there is danger of wet below, it should be raised mostly above the general surface. The surrounding wall should be nine inches, but a brick wide wall is often made to do, especially for that part which forms the parapet above ground. It should be coped all round with a timber plate or kirb, framed and mortised together, which effectually secures the brick-work in its proper situation.

The bottom of the pit should be levelled and well rammed, and if paved with any coarse material, it is an advantage in preserving the bark. And the path or alley round the pit must be neatly paved with brick or stone, as may be most convenient.

Glass-work.—The glass part for inclosing the whole should consist of a close-continued range of glass-fashes all along the front, both ends and roof, quite up to the back wall; each fash being a yard, or three feet six inches wide; and for the support of which, framings of timber must be erected in the brick-walling, conformable to the width and length of the fashes, the whole being neatly fixed.

And for the reception of the perpendicular glasses in the front and ends, a substantial timber plate must be placed along the top of the front and end walls, upon which should be erected uprights, at proper distances, framed to a plate or crown-piece above, of sufficient height to raise the whole front head high, both ends corresponding with the front and back; a plate of timber being also framed to the back wall above, to receive the sloping bars from the frame-work in front; proper grooves being formed in the front plates below and above, to receive the ends of the perpendicular fashes, sliding close against the outside of the uprights all the way along the front, or they may be contrived for only every other fash, to slide one on the side of the other, but the former is the better method.

And from the top of the upright framing in front should be carried substantial cross-bars or bearers, sloping to the back wall, where they are framed at both ends to the wood-work or plates, at regular distances, to receive and support the sloping glass fashes of the roof, when placed close together upon the cross bars or rafters, and generally ranging in two or more tiers, sliding one over the other, of sufficient length together to reach quite from the top of the upright

framing in front, to the top of the back wall. The cross bars should be grooved lengthways above, to carry off wet falling between the frames of the sloping lights: making the upper end of the tier of glasses shut close up to the plate in the wall behind, running under a proper coping of wood or lead, fixed along above close to the wall, and lapped down of due width to cover, and shoot off the wet sufficiently from the upper termination of the top fashes. Some wide houses have, exclusive of the main slope sliding glass fashes, a shorter upper tier of glass fixed; the upper ends being secured under a coping as above, and the lower ends lapping over the top ends of the upper sliding tier, and this over that below in the same manner, to shoot the wet clear over each upper end or termination; likewise along the under outer edge of the top plate, or crown piece in front, may be a small channel to receive the water from the sloping glass fashes, and convey it to one or both ends without running down upon the upright fashes, being careful that the top part behind be well framed and secured, water-tight, and the top of the back wall finished a little higher than the glasses, with a neat coping the whole length of the building.

And the bars of wood which support the glasses should be neatly formed, and made neither very broad nor thick to intercept the rays of the sun. Those however, at top, should be strong enough to support the glasses without bending under them. In wide houses, uprights are arranged within, at proper distances, to support the cross rafters more perfectly than could otherwise be the case.

Glazing.—But in respect to the glass work in the sloping fashes, the panes of glass should be laid in putty, with the ends lapping over each other about half an inch, the vacancies of which are, in some, closed up at bottom with putty, others leave each lapping of the panes open, in order for the air to enter moderately, and that the rancid vapours arising from the fermentation of the bark-bed, &c. within, may thereby be kept in constant motion, without condensing much, and also that such as condense against the glasses may discharge themselves at those places without dropping upon the plants. The upright fashes in front may either be glazed as above, or the panes laid in lead work; being very careful to have the glazing well performed, and proof against any wet that may happen to beat against them. The doors should have the upper parts fashed and glazed to correspond with the other glass-work of the house.

Painting.—And on the inside, the walls should be plastered,argeted, and white-washed; and all the wood-work within and without, painted white in oil colour. Some, however, have the back wall painted or coloured rather dark.

Shelves.—Ranges of narrow shelves for pots of small plants may be erected where most convenient, some behind over the flues, a single range near the top glasses towards the back part, supported either by brackets suspended from the cross bars above, or by uprights erected on the parapet wall of the bark-pit. A range or two of narrow ones may also be placed occasionally along both ends above the flues where there is a necessity for a very great number.

In wide houses, where the cross bars or bearers of the sloping or top glass fashes appear to want support, some neat uprights, either of wood or iron, may be erected upon the bark-bed walling, at convenient distances, and high enough to reach the bearers above. This is a neat mode of affording them support.

And on the outside, behind, should be erected a close shed, the whole length, or at least a small covered shed over each fire-place with a door to shut, for the convenience of

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attending the fires; but the former is much the best, as it will serve to defend the back of the house from the outward air, and to stow fuel for the general use of them, also for garden tools, and all garden utensils when not in use, to preserve them from the weather; as well as to lay portions of earth in occasionally, to have it dry, for particular purposes in winter and early spring, as in forcing frames, &c.

Sometimes hot-houses are furnished with top covers, to draw over the glass sashes occasionally, in time of severe frosts and storms; and sometimes by slight sliding shutters, fitted to the width of the separate sashes; but these are inconvenient, and require considerable time and trouble in their application. At other times they are formed of painted canvas, on long poles or rollers, fixed lengthways along the tops of the houses just above the upper ends of the top sashes, which, by means of lines and pullies, are readily let down and rolled up as there may be occasion.

In the plate of *Hot-house*, at *figs.* 1. and 2. are contained the front elevation and ground plan of an improved hot-house, which has been found to answer well in practice in different instances.

At *fig.* 3. is shewn the section of a hot-house for pines, in which the objections arising from the expence and risk attending their culture on the old plan are chiefly obviated. It is the invention of Mr. Loudon. In this, A, A, A, are the smoke flues; B, the air flue; C, a large vacuity of heated air; D, the rubble stone vacuity; E, the walk in the centre; F, earth in which the plants grow; G, steam and air tubes; H, the inner roofing; I, the surface of the ground. See London's Treatise on Hot-houses.

A plan for another kind of improved hot-house has been suggested by Dr. James Anderson, for which he has taken out a patent. It produces its effects chiefly by the heat of the sun, without the aid of flues, tan-bark, or steam. This improvement extends to every sort of hot-house; and the advantages of such hot-houses are, according to the statement the doctor has given, very considerable. They are,

1st. That "in every kind of temperature, if the works are to be erected new, from the foundation, few cases can occur, in which they may not be so placed, as that the whole heat required may be obtained without occasioning the expenditure of one shilling for fuel; but in the most unfavourable cases that can occur, the expenditure of fuel will not amount to one-tenth part of what is now universally employed for producing similar effects."

2d. That "in a vinery, for example, where the grapes are not meant to be forced farther than to ripen from the middle of June to the end of July, as the season may be, no fuel will, in any case, be required, the whole effect being produced by the sun alone."

3d. That "where the grapes are to ripen in April or May, some artificial heat will be wanted; but the quantity of fuel, even in this case, will be so inconsiderable, that in a house which produces, on an average of years, under ordinary good management, not less than ten thousand full-sized bunches of grapes, and fifteen hundred pots of strawberries, or other such plants, the consumption of fuel will not exceed half a London chaldron of coals, and so in proportion for those of a larger extent."

4th. That "in the pinery and stove, the expenditure of fuel will be diminished in a proportionate degree; while, at the same time, the use of bark (or of steam, as a substitute for the heat of tan) will be entirely dispensed with; which, in many situations, will be the saving of much expence."

5th. That "these savings of expence will be effected not only without any detriment to the pines and other

plants, but with great advantage to them all; for, in consequence of these improvements, those diseases which so much weaken, and often destroy the most valuable plants, the damp in particular, will be entirely removed, and vermin, in a great measure, annihilated; the plants too, in consequence of the ventilation that may be at all times given them at pleasure, to any degree that shall be thought proper, (without varying the temperature from that degree which may be deemed most salutary to the plants, at the same time that it may be changed, at will, from moist to dry, or the reverse,) may be kept in a state of perpetual health and luxuriance that has been hitherto unknown in these repositories." And,

6th. That "all these effects will be produced by such a simple apparatus, and that so adapted as to moderate of itself extremes of every sort, that it will become a matter of much less nicety and trouble to the gardener than at present; as he may safely be absent for a much longer time; and thus the accidents which originate from negligence less frequently occur."

It may be noticed that these houses are made almost wholly of wood and glass. The base is a frame of wood, which rests horizontally upon posts fixed firm in the ground, to which the frame is screwed by strong iron screws; the whole being so constructed as to admit of being taken down and removed at pleasure without violence, merely by undoing the screws. They are capable of being formed of any dimensions. But a full explanation of their nature, and the principles on which they produce their effects, may be seen in the doctor's work on the "Patent Hot-house," lately published. Hot-houses on this plan are constructed by George Byfield, esq. architect, Craven street, Strand, London; and Mr. Samuel Butler, Hot-house-builder, Little Chelsea, near London.

Making Nursery and Succession Houses.—It must be observed, that in addition to these hot-houses, others of smaller dimensions, for striking and raising the young plants in, and as succession houses for receiving them into afterwards, when of a year's growth, to bring them forward to a proper size for being used as fruiting plants, are necessary, especially where the pine-apple is cultivated upon an extensive scale, in order to afford full room in the larger houses for the fruiting plants to grow properly in.

These houses may be erected either as appendages to the main house, or detached at a little distance, as most convenient. Where the situation admits, it is, however, more convenient and ornamental to join them in a line with the main house, one at each end. They are formed nearly on the same construction, only smaller both in length, width, and height, than the hot-house.

Form of Nursery House.—This is sometimes formed in the manner of a common detached bark-pit, without any upright glasses in front, having a wall all round, five or six feet behind, gradually sloping at each end, to about four feet in front, and with only sliding glasses at top. Its dimensions must vary according to the extent of plants. It is often termed simply the pit, as the whole internal space in length and width is allotted entirely as a pit for a bark-bed, without any walk within, or door for entrance, the necessary culture being performed by sliding up the glasses at top, the flues for the fires being formed in the upper part of the back wall, above the surface height of the bark-bed. They may, however, be formed in the manner of the hot house, with doors, &c. which is perhaps the best method. One on this principle, for general purposes, has lately been constructed on a small scale, by Mr. Loudon, which, merely by one fire, is capable of affording four different temperatures at the same

same time, and of course, of forcing most sorts of common vegetables, as well as growing vines, pines, and melons, each in their suitable climates, at little trouble or expence. A surface plan of it is given in the annexed plate, in which A shews the cover of the excavation, comprising the furnace; B, the air registers, which serve to form the different temperatures; C, the air and steam tubes, by which the heated air is admitted from the vacuity formed by the rubble stone, as well as by the steam afforded by pouring in water, &c. In the section of this pit in the same plate, A represents the smoke flue; B, the air flue; C, the chimney; D, the supports of the rubble vacuity; E, the rubble cavity; F, the earth and the plants; G, the inner roofing rolled up; H, the damper; I, the furnace hole; K, the cover of the fame; L, the surface of the ground, &c. There are many advantages derived from this mode of construction, as those of saving labour, expence, and littering the garden ground; and by slight alterations it will be found to answer cheaply for the business of forcing vines. See Loudon on Hot-houses.

Form of Succession House.—This sort of house should be constructed with crect glasses in front, and sloping sashes at top, with a door for entrance, and an alley or walk next the back wall; or, what is better, continued round the bark-pit. And where joined to the end of the hot-house, it may be divided from it by a sliding glass partition, having a separate furnace and flues, as the young pine plants do not at all times require the same degree of fire-heat as the older pines. The dimensions must vary according to circumstances, and the number of plants. See STOVE and GREEN-house.

Hot-house Plants, are all such of the tender, exotic, or other kinds, as require this sort of house for their growth, protection, and preservation, in this climate. This description of plants is very extensive, and of many different kinds. See STOVE Plants.

Hot-house, in the *Salt Works*, the place where they dry the salt after it is taken out of the boiling pan. In the Cheshire salt-works, this is situated between the furnace and the funnels of the chimney which convey up the smoke. Along the floor of this room there run two funnels, nearly in a horizontal direction. From the furnace, after this course along the floor, they rise perpendicularly. In these the flame and smoke running along, heat the room by the way.

Hot-shoots, or *Hovilses*, a sort of factitious, or compound fire, made of a third part of any coal, pit, sea, or charcoal, mixed with two-thirds of loam.

These ingredients are to be made up into balls, moistened with a little urine, round, or in any other form, at pleasure, and exposed to the air till thoroughly dry; then may they be burnt in the most orderly fire imaginable, affording a glowing, regular, and constant heat, for seven or eight hours, without stirring. This mixture is also used in some parts to slacken the impetuous devouring of the fire, and keep coals from consuming too fast.

Hot Springs, in *Geology*. A great part of the writers on thermal waters have ascribed their heat to subterranean fires, seated deep in the earth, and have supposed that the waters of hot and warm springs were all alike boiling hot, until by their passage through different masses of cool strata, they were reduced to the temperature at which they issue. Mr. Farey's recent examination and report on Derbyshire, vol. i. shews, that the hot or warm springs at Buxton, Matlock Bath, Stoney-Middleton, &c. are situated on or near the principal faults or vertical derangements of strata in these districts, and the probability that shale, brought in contact

with toadstone, in the faces of these faults, excites the fermentation, or decomposition, which develops the constant heat of these curious springs. See *MINERAL Waters*.

Hot Wall, in *Gardening*, a term applied to a range or extent of brick or stone walling, fronted with glass-work, so as to inclose a space of several feet in width, constructed with internal fire-flues, &c. designed for forcing fruit-trees to early production. It consists of two parts, the flues and furnace in the wall; and the contrivance of a covering of canvas or netting to protect the trees.

Situations of this nature are mostly ranged lengthways, east and west, to front the full sun; having the south side, or that exposed to the sun, covered by a frame-work of glass, the whole length and height, including a space of but moderate width, as four, five, six, or eight feet for one row of trees behind, trained in the wall-tree order, and extended from twenty or thirty, to forty, fifty, or a hundred feet in length; or of greater width, as ten, twelve, or fifteen feet, in the forcing-house manner, to admit of a range of trained trees behind, and others of lower growth forward; and, in either having internal flues for fire-heat in the main-wall, and continued round along towards the front glass, or sometimes ranged longitudinally along the middle space. Some hot-walls have likewise the front inclosure of glass-work, of sufficient width to admit of forming an internal pit, from four to five or six feet in width, the length of the erection; in which to make a bark-bed, or sometimes a dung hot-bed, or occasionally dung below and bark above, to assist, in conjunction with the fire-heat of the flues, in warming the internal air of them.

And in either method, a border of good mellow, loamy, or other fertile earth of proper width, is formed against the main-wall, in which to plant the trees. Where there is no bark-bed, the whole bottom space is formed with good earth, having a narrow inclosure of glass, four, five, or six feet, to have only a range of trees next the wall, trained as wall-trees, or espaliers; or sometimes made wider, to have wall-trees behind trained to the height of the wall, and others trained, in lower growth, in the internal space forward, either in the espalier manner, or as small dwarf-standards, or sometimes as horizontal dwarfs. See *DWARF Trees*.

When these are made of wide dimensions, either to admit of a bark-pit, or to have the whole bottom space of earth set with trees against the wall, and others planted forward between these and the glasses, they may properly be considered as forcing-houses.

But in proper hot-walls, as such as have narrow inclosures of glass from four to five or six feet in width, containing only one range of trees, they may be trained towards the wall upon a trellis-work, where there is a range of flues immediately next the wall; but where all the flues are ranged forward, the trees may be trained close to the wall. See *FORCING-frame*.

The flues in these walls should be formed in such a way as to distribute the heat equally over the wall, which is easily effected. The fronts of them should be made at least a brick in thickness, to preserve the heat more effectually. The most proper furnace for this use is that sold by Mr. Cook in London, and connected with a damper, which is very useful. The covering of canvas, gauze, or netting of the small kind, should be fixed to the wall top, by means of small rafters, and to the border, about three feet from the roots of the trees; the roller for containing this covering being fastened to the bottom parts of these rafters. By this means, and the use of cords and pullies, such coverings can easily be drawn up to the top of the wall, or be rolled down, as there may be occasion. This covering should never be neglected

in such walls, as it is of vast utility in preserving the heat, as well as in preventing the effects of destructive frosts and chilly dews at particular seasons. See *BARK-pit*, and *PIT*.

HOTAMBÆIA, in *Zoology*, the name of a species of serpent found in the East Indies, of a greyish-yellow colour, and very rank smell.

HOTCH, in *Agriculture*, a term provincially applied to a bad job of any sort of work, or to such bargains as do not turn out well.

HOTCH-POT, in *Law*, signifies a mixture or blending of lands, given in marriage, with other lands in fee accruing by descent. Thus, a man seized of thirty acres of land in fee, hath two daughters, and gives with one of them ten acres in frank-marriage, and dies seized of the other twenty. If now, she that is thus married will have any part of the twenty acres, she must put her lands given in frank-marriage in hotch-pot, that is, she must refuse to take the sole profits of the ten acres, but suffer them to be mingled with the other twenty, so that an equal division may be made of the whole thirty between her and her sister. Thus, for her ten acres she will be entitled to fifteen. Coke on Litt.

This was left to the choice of the donee in frank-marriage; and if she did not chuse to put her lands into hotch-pot, she was presumed to be sufficiently provided for, and the rest of the inheritance was divided among her other sisters. The law of hotch-pot took place only, when the other lands descending from the ancestor were fee-simple; for if they descended in tail, the donee in frank-marriage was entitled to her share, without bringing the lands so given into hotch-pot. (Litt. § 274.) And the reason is, because lands descending in fee-simple are distributed by the policy of law, for the maintenance of all the daughters; and if one has a sufficient provision out of the same inheritance, equal to the rest, it is not reasonable that she should have more; but lands descending in tail are not distributed by the operation of the law, but by the designation of the giver, *per formam doni*, however unequal the distribution may be.

Also no lands, but such as are given in frank-marriage, shall be brought into hotch-pot; for no others are looked upon in law as given for the advancement of the woman, or by way of marriage-portion. (Litt. 275.) But gifts in frank-marriage having fallen into disuse, it would have been needless to mention the law of hotch-pot, if this method of division had not been revived and copied by the statute for distribution of personal estates. See *FRANK-MARRIAGE*, and *CUSTOM of London*.

HOTCH-POTCH, or **HODGE-PODGE**, from the French *bâche en poche*, or, according to Camden, *bachee en pot*, i. e. *boiled in a pot*, primarily denotes a Flemish medley dish, made of flesh cut in pieces, and sodden with herbs, roots, &c.

HOTMAN, **FRANCIS**, in *Biography*, a French civilian, was born at Paris in 1524: at the age of fifteen he was sent to study the law at Orleans, where his progress was so rapid, that within three years he received the doctor's degree. He read lectures at Paris, but quitting the religion in which he was educated, and embracing the Protestant system, he went to Switzerland, from whence he removed to Strasburg, where he obtained a professorship of the civil law. He afterwards engaged in the service of the king of Navarre, and took two journies into Germany, for the purpose of obtaining succours from the Protestant princes. On his return, he removed to Valence, where his law-lectures revived the credit of the university: after which he was induced to accept a professorship at Bourges; this he soon resigned, to partake in the councils of the heads of the Protestant party at Orleans; but at the time of the infamous massacre of St. Bartho-

lomew he retired to Basil, where he died, in the year 1590. His works were published, in 1599, in three volumes folio. He was a learned and profound jurist, an eloquent historian, an able politician, and an ingenious man. His works consist, for the most part, of tracts relative to the civil law, and to the Roman history and constitution. Bayle.

HOTOM, or **KOTAN**, in *Geography*, a town of Little Bucharia; 230 miles S.E. of Cashgar: N. lat. 37° 42'. E. long. 80°.

HOTORE, a town of Bengal; 22 miles E.S.E. of Doefa.

HOTOWACZYN, a town of Lithuania, in the palatinate of Troki; 16 miles E. of Grodno.

HOTTENPLOZ, a town of Moravia, in the circle of Prerau, insulated in Silesia; 12 miles N.N.E. of Jagern-dorf.

HOTTENTOT CHERRY, in *Botany*. See *CASSINE*.

HOTTENTOTS, *Country of*, in *Geography*, a large territory of Africa, and part of Caffraria, bounded on the N. by countries unknown, and on the S.E., S., and W. by the sea. The coast is mountainous, and abounds in capes and bays. The whole country, distinguished by this appellation, is inhabited by different tribes of Hottentots, governed by various chiefs, who have no fixed residence, but live in huts or portable houses, and remove their kraals, or villages, whenever the pasture fails to supply their cattle, or upon the death of an inhabitant. Ever since the establishment of the Dutch in the southern part of Africa, they have been separated and dispersed from the neighbourhood of the Cape of Good Hope; and those who from ill usage and oppression have been removed to a considerable distance, or to regions that have been inaccessible to their pursuers, have maintained some separate establishments, and retained, in a degree, their primitive habits and manners. The Hottentots are divided from the Caffres or Kaffers by the Great Fish river. The disposition and character of these people have been much misrepresented; and we are indebted principally to Mr. Barrow for a just account of them; who has rectified the mistakes and confirmed the more favourable representations of modern writers. Dr. Sparrman has given the following account of the Hottentots. With regard to their persons, he says, they are as tall as most Europeans, and if they are, in general, less corpulent, this is owing to their being more stinted in their food, and to their not being accustomed to hard labour. But that they have small hands and feet compared with the other parts of their bodies has been remarked by no one before, and may, perhaps, be regarded as a characteristic mark of this nation. The root of the nose is for the most part very low, by which means the distance of the eyes from each other appears to be greater than in Europeans. The tip of the nose likewise is pretty flat. The iris is scarcely ever of a light colour, but has a dark brown cast, which sometimes approaches to black. Their skin is of a yellowish-brown hue, resembling that of an European who has the jaundice in a high degree; however, their colour is not in the least observable in the whites of the eyes. One does not find such thick lips among the Hottentots as among their neighbours the Negroes, the Caffres, and the Mozambiques. Their mouths are of a middling size, and almost always furnished with a set of the finest teeth that can be seen, and taken together with the rest of their features, as well as their shape, carriage, and every motion, in short their "tout ensemble," indicate health and content, or at least an air of "sans souci." At the same time, this careless mien discovers marks of alacrity and resolution; qualities which the Hottentots can occasionally exhibit. Their heads one would suppose

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to be covered with a black, though not very close, frizzled kind of wool, if the natural harshness of it did not shew that it was hair, if possible, more woolly than that of the negroes. If, in other respects, there should, by great chance, be observed any traces of a beard, or of hair, on any other parts of the body, such as are seen on the Europeans, it is, however, very trifling, and generally of the same kind as that on the head. Dr. Sparrman refutes an opinion, which has represented the men as being different from others, and adds, that the women have no parts uncommon to the rest of their sex. With respect to their dress, and method of painting themselves, he remarks, the latter (if painting it may be called) consists in besmearing their bodies all over most copiously with fat, in which there is mixed up a little foot. This is never wiped off; on the contrary, he never saw them use any thing to clean their skins, excepting that, when in greasing the wheels of their waggons, their hands were besmeared with tar and pitch, they used to get it off very easily with cow dung, at the same time rubbing their arms up to the shoulders with this cosmetic; so that as the dust and other filth, together with their sooty ointment and the sweat of their bodies, must necessarily, though it is continually wearing off, in some measure adhere to the skin, it contributes not a little to conceal the natural hue of the latter, and at the same time to change it from a bright umber-brown to a brownish-yellow colour, obscured with filth and natiness. Besides the pleasure the Hottentots find in besmearing their bodies from head to foot, they likewise perfume themselves with powder of herbs, with which they sprinkle both their heads and bodies, rubbing it all over them when they besmear themselves. The odour of it is at the same time rank and aromatic, and seems to come nearest to that of the poppy mixed with spices. The plants used for this purpose are different species of the *Diosma*, called by the Hottentots "Bucku," and considered by them as possessing great virtues in curing disorders. Some of these species are very common about the Cape; but one particular sort, which grows about "Goud's-Rivier," is said to be so valuable, that no more than a thimble full of it is given in exchange for a lamb.

The Hottentots, with their skins thus besmeared with grease and foot, and Bucku-powders, are in a great measure defended from the influence of the air, and may in a manner reckon themselves dressed. In other respects both men and women appear naked, excepting that a trifling covering always conceals part of their bodies. The covering of the men consists of a bag or purse made of skin, hanging quite open, and only fastened by a small part of its upper end to a narrow belt, so that it is an imperfect covering; and when the wearer of it is in motion, it is no concealment at all. This purse is called Jackall, from the name of the animal, of whose skin it is prepared, with the hairy side turned outward. As another covering which decency requires the men to use, we may also consider two leather straps, generally hanging from the bottom of the chine of the back down upon the thighs, each of them being in the form of an isosceles triangle, with the points or upper ends fastened to the belt already mentioned, and with their bases, about three fingers broad, hanging carelessly down. These straps make a kind of rattling noise, as the Hottentot runs along, and probably by fanning him, produce an agreeable coolness. Among the Hottentots, the fair sex appear to be the most modest, for the females cover themselves much more scrupulously than the men, using for this purpose two, and very often three coverings, made of a prepared and well-greased skin, which are fastened round their bodies with a thong, resembling the aprons of European females. The outermost is always the largest, measuring in breadth from about 6 to

12 inches. This is frequently adorned with glass-beads strung in different figures, thus indicating among the unpolished Hottentots not only a regard to neatness and decorum, but powers of invention, and a disposition to set off their persons to the best advantage. The outermost apron reaches about half way down the thighs, and is chiefly intended for ornament. The middle one is about a third or one-half less, and is regarded by them as an additional entrenchment of modesty, when their gala garment is laid aside. The third, or innermost, about the size of one's hand, is said to be useful at certain periods, which are much less troublesome to the fair sex here than in Europe. All these aprons, however, and even that which is decorated with beads, are not less besmeared and greasy than their bodies. The garment worn by the Hottentots for covering their bodies is a sheep-skin, with the woolly side turned inwards; this pelisse, or else a cloak made of some smaller fur, is tied forwards over the breast, and worn loose, or wrapped round them, as far as below the knees, according to the state of the weather. In general, the Hottentots do not burden themselves with many changes of their cloaks, or "krosses," (as they call them in broken Dutch), but are content with one, which serves them both for cloathing and bedding; and in this they lie on the bare ground, covered with this kross or karofs. The cloak, or karofs, of the woman differs little from that of the men, except that their's has a little hood or pouch, with the hairy side inwards, in which they carry their infants, to which they now and then throw the breast over their shoulders. The men have seldom any peculiar covering on their heads. The women likewise go bare-headed: but when they use any covering, it is a cap in form of a truncated cone, made of some animal's stomach, and as black as foot, mixed with fat, can make it. Over this they sometimes wear a kind of oval wreath, or a crown made of a buffalo's hide, with the brown hair upwards, about four fingers high, and surrounding the head so as to reach a little way down upon the forehead and the neck behind. The rims of this wreath, above and below, are ornamented with a row of small shells of the *Cypræa* kind, in number about 30, and placed quite close, so that their beautiful white enamel, together with their mouths, is turned outwards. Between these two rows of shells, there are others disposed as their fancy suggests. The ears of the Hottentots are never adorned with any pendant or ornament, any more than the nose, according to the custom of other savages: the latter, however, is sometimes marked with a black streak of foot, or a large spot of red lead; and on high days and holidays they put some of the latter on their cheeks. The necks of the men are bare; but those of the women are decked with an ornament, held in high estimation, which consists of a thong of undressed leather, upon which are strung eight or ten shells. These shells are commonly sold for not less than a sheep a-piece, as it is said they are procured no where else than on the most distant coast of Caffraria. On their arms and legs they wear rings, and this ornament is used by both sexes. These rings are made of leather straps, formed in a circular shape. This ornament has given occasion to the almost universally received report, that the Hottentots wrap guts about their legs, in order to eat them occasionally. The men wear from one to five or six of these rings on their arms, but seldom any on their legs. These rings are of various thickneses; and to the matrons of higher rank, who have them both on their arms and legs, they give great trouble both in the preparation and use of them. Rings of iron and copper, and especially of brass, of the size of a goose-quill, are considered as more handsome and more valuable than those of leather. The girls are not allowed to wear any rings till they are marriageable.

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marriageable. The Hottentots seldom wear any shoes: those in occasional use are made of undressed leather, with the hairy side outwards; which leather undergoes no other preparation besides that of being beaten and moistened with cow-dung and some kind of grease. The Hottentots who live within the boundaries of the Dutch colonies seldom make use of any weapons; here and there they furnish themselves with javelins, as a defence against the wolves: these are called "Hassagais." The habitations of the Hottentots are like their dress, adapted to the wandering pastoral life. They scarcely merit any other name than that of huts. In a Hottentot kraal or village the huts are built exactly alike, so that the equality of fortune and happiness among these people excludes mutual jealousy and envy. Some of these huts are circular, others of an oblong shape, resembling a rural bee-hive or a vault. The ground plot is from 18 to 24 feet in diameter: the highest of them are so low, that even in the centre of the hut, a middle-sized man cannot stand upright. The door is barely three feet high; but the Hottentot finds no difficulty in stooping and crawling on all fours, as he is always more inclined to lie down than to stand. The fireplace is in the middle of each hut, and therefore when they sit or rather lie in a circle round the fire, the whole company equally enjoy the benefit of its warmth. The door is the only part of the hut that lets in day-light, and it is the only outlet for smoke. The frame of the arched roof is composed of slender rods and sprays of trees, which, previously bent into a proper form, are laid, parallel to each other, or cross-wise; and these are strengthened by binding others round them in a circular form with withies. These withies, as well as the rods themselves, are taken chiefly from the "Cliffortia conoides," which grows plentifully in this country near the rivers. Large mats are then laid very neatly over this lattice-work, so as perfectly to cover the whole. The aperture of the door is closed when occasion requires, with a skin fitted to it, or a piece of matting. The mats are made of cane or reed, fastened together with sinews or catgut, or some kind of packthread procured from the Europeans. When a Hottentot has a mind to take down his house and remove his dwelling, he lays all his mats, skins, and sprays, on the backs of his cattle. The order or distribution of these tents in a kraal or clan is most frequently in the form of a circle, with the doors inwards; by these means a kind of yard or court is formed, where the cattle are kept at night. The milk, as soon as it is taken from the cow, is put to other milk which is curdled, and is kept in a leather sack; of this the hairy side, being considered as the cleanlier, is turned inwards; so that the milk is never drunk while it is sweet. In certain northern districts, such as Roggeveld, or Bokkeveld, where the land is, as it is called, Karrow (which see), or dry and parched, the Hottentots, as well as the colonists, are shepherds.

From the account of the Hottentots given by Mr. Barrow it appears, that the neglect or oppression with which they have been treated by the colonists has contributed to corrupt and degrade them. Having first held out the irresistible charm which spirituous liquors and tobacco are found to possess among all people in a rude state of society, they took the advantage of exchanging those pernicious poisons for the only means the natives enjoyed of subsisting themselves and their families; and instead of instructing and encouraging a race of men of willing and intelligent mind to renew the means of subsistence of which they had deprived them, they imported at a vast expence a number of Malay slaves, not more expert and much less to be depended on than the Hottentots, to whom, indeed, they even preferred the stupid negroes of Mozambique and Madagascar. That they are capable of

instruction and improvement, both mental and moral, appears from the laudable establishment of the Herrnhüters or Moravian missionaries, who, by the protection afforded them under the British government, and its liberality, through general Dundas, in enabling them to enlarge their territory, had succeeded so far, in the object of their mission, as to bring together into one society not fewer, at the time of the evacuation of the colony, than 600 poor Hottentots; whom they not only instructed in the principles of the Christian religion, but by example as well as by precept taught to feel, that their value in society was in proportion to the benefit they were able to render to that society, by their labour and moral conduct. On the contrary, when they experienced a treatment less favourable than that of the meanest slaves, and were employed with a view merely to the benefit of those who had possession of their country, and were neither paid, clothed, nor fed, they exhibited on the same spot a scene of filth and wretchedness; they became a nuisance to the town, and of course it became necessary to disband them. Sir James Craig bears honourable testimony to the disposition and conduct of those Hottentots whom he formed into a corps. He represents them as contented and grateful, as intelligent and docile; no more addicted to drunkenness than our own people, nor invincibly disposed to rove and abandon the service assigned them. By degrees they became cleanly in their persons; the practice of besmearing themselves with grease being entirely left off; and they frequently washed themselves in a rivulet, where they could have in view no other object but cleanliness.

Other missionaries, says Mr. Barrow, but of different societies, have lately proceeded to very distant parts of the colony, and some even much beyond it, both among the Kaffers to the eastward, and the Bosjesman Hottentots to the northward: the latter they represent as a docile and tractable people, inexpressibly grateful to their benefactors; but they say, the Kaffers are a volatile race, extremely good humoured, and ridiculing all their attempts to convert them to Christianity. A Hottentot, says the same ingenious writer, among the many good qualities he possesses, has one which he is master of in an eminent degree; that is, a rigid adherence to truth. When accused of a crime of which he has been guilty, with native simplicity he always states the fact as it happened; but at the same time he is always ready with a justification of what he has done. From lying and stealing, the predominant and inseparable vices of the condition of slavery, the Hottentots may be considered as exempt. "In the whole course of my travels, and in the midst of the numerous attendants of this nation, with which I was constantly surrounded, I can with safety declare that I never was robbed nor deceived by any of them." Of the severity of the treatment which these poor people received from the savage boors of the country, we have many instances on record. We shall content ourselves with mentioning only one. A young Hottentot woman, with a child in her arms, was found lying stretched on the ground in a most deplorable condition; she had been cut from head to foot with one of those infernal whips made of the hide of a rhinoceros or sea-cow, known by the name of "Sambocs," in such a barbarous and unmerciful manner, that there was scarcely a spot on her whole body free from stripes; nor had the sides of the little infant, in clinging to its mother, escaped the strokes of the brutal monster. For several days after she was taken care of, there were little hopes of her recovery; though by means of a good constitution and tender treatment she did afterwards recover. And what does the reader suppose could have been the atrocious crime that demanded such chastisement? The only crime alleged against her was the attempt to follow her husband, who was among the number of those

of his countrymen that had determined to throw themselves upon the protection of the English. A Hottentot is capable of strong attachments; with a readiness to acknowledge, he possesses the mind to feel the force of a benevolent action. "I never found," says Mr. Barrow, "that any little act of kindness or attention was thrown away upon a Hottentot; but on the contrary, I have frequently had occasion to remark the joy that sparkled on his countenance, whenever an opportunity occurred to enable him to discharge his debt of gratitude. I give full credit to all that Monsieur le Vaillant has said with regard to the fidelity and attachment he experienced from this race of men; of whom the natural character and disposition seem to approach nearer to that of the Hindus than of any other nation."

Dr. Sparrman mentions a tribe of Hottentots, called "Boshmans," or "Bosheismen," who live round about Camdebo and Sneeuwberg, who are sworn enemies to the pastoral life, and who live on hunting and plunder. Their weapons are poisoned arrows, which, shot out of a small bow, will fly to the distance of 200 paces, and will hit a mark with a tolerable degree of certainty at the distance of 50 or even 100 paces. From this distance they can by stealth, as it were, kill the game they hunt for food, as well as their foes, and even so large and tremendous a beast as the lion. Their bows are hardly a yard long, and about an inch thick in the middle, and very much pointed at both ends. The strings of the bows are sinews, or a kind of hemp, or the inner bark of some vegetable. The arrows are a foot and a half long, made of reed, armed with a highly polished bone five or six inches long. At the distance of an inch or two from the tip of this bone, a piece of quill is bound very fast with sinews, so that the arrow may not be easily drawn out of the flesh, and thus the poison insinuates itself and infects the wound. Their quivers are two feet long, and four inches in diameter. Besides a dozen of arrows, every quiver contains a slender hone of sand-stone for whetting the iron head, and a brush for laying on the poison. The poison is taken from several different kinds of serpents, and the more venomous they are, the better. The dwellings of these foes to a pastoral life are generally not more agreeable than their manners. Like the wild beasts, bushes and clefts in rocks by turns serve them instead of houses; and some of them are said to be so far worse than beasts, that their foil has been found close to their habitations. Many of them are entirely naked; and others cover their bodies with such skins of animals as they are able to procure. As ignorant of agriculture as apes and monkeys, like them they are obliged to wander about over hills and dales after certain wild roots, berries, and plants, which they eat raw. Their tables are sometimes covered with the larvæ of insects, snakes, and spiders. The capture of slaves from this race of men is easily effected. For this purpose, several farmers, who are in want of servants, join together, and take a journey to that part of the country where the Bosheismen live. They themselves, as well as their Lego-Hottentots, or such Bosheismen as have been caught some time before, and have been trained up to fidelity in their service, endeavour to spy out where the wild Bosheismen have their haunts, which is best discovered by the smoke of their fires. They are found in societies from 10 to 50 and 100. The farmers in a dark night set upon them, notwithstanding their numbers, with six or eight people, having previously stationed themselves at some distance round about the kraal. They then give the alarm by firing a gun or two. The savages are thus terrified; some of them make their escape by flight; others are stupid and timorous, and suffer themselves to be captured. These are treated at first kindly, and plentifully fed with various kinds of game;

supplied with tobacco, and induced to accompany the colonist to his place of abode. Their luxurious feasts of meat and fat are then exchanged for butter milk, frumenty, and halty-pudding. With this change of fare, and a corresponding alteration of usage, they very sensibly feel the hardship of their condition, and make every effort in their power to escape.

The language of the Hottentots is said to be a composition of strange and disagreeable sounds, resembling rather the noise of irritated turkies, the chattering of magpies, hooting of owls, than human sound or articulation, and depending on extraordinary vibrations, inflections, and clappings of the tongue against the palate; and therefore it is no wonder that it should be understood by few, and that the knowledge of it can scarcely be acquired by persons of any other nation. As to their religion, it does not appear that they possess any, or that till of late any pains have been taken by their invaders and conquerors to afford them any instruction. Addicted to magic, they have among them abundance of witches and conjurers, and under bodily disorders they run to them for relief; and as their wizards employ both internal and external remedies, they are sometimes successful, but they more frequently fail in administering efficacious remedies. Destitute, as they are said to be, of any religious principles, they seem to have some ideas of a future state. Some have said that they worship a genus of insects called "Mantis," and others have affirmed that they pay a kind of adoration to the moon; but these reports have not been duly authenticated. See PATERSON'S Narrative of four Journeys into the Country of the Hottentots, &c. 4to. 1789. Barrow's Travels in Africa, vol. i. and ii. See BOOSHOOANAS, CAFFRARIA, KAFFERS, KOUSIS. See also CAPE OF GOOD HOPE.

HOTTENTOT *Holland*, a district of Southern Africa, which is a continuation of what is called the Sand Down, being a large tract of country lying between the Table bay, and bay Falso. Most of it is uninhabitable, on account of a white sand blown up by the S.E. winds in very large ridges. There are, however, many shrubs dispersed in different parts. It is the principal place whence they procure their fire-wood at the Cape. This territory is situated on the N.E. side of bay Falso, and surrounded on three sides by lofty mountains; but open to the S.W. where the bay is in view. The soil is not so good for vines as most other places on this side of the mountains, being wet and marshy; but it produces excellent corn. Here is one of the most difficult passes into the country, called "Hottentot Holland's Kloof;" *kloaf* or *kloof* denoting a narrow pass through the mountains. This high chain of mountains terminates the Cape isthmus, and at a few miles to the southward of the Kloof it forms the eastern boundary of the extensive bay Falso. This Kloof is a narrow road cut through the hill, the summit of which appears to be nearly of a height with the Table land. The chain of mountains, commencing at cape Falso, or the Hang-Lip, extends to the N.W. for nearly 300 miles; and from 20 to 40 miles from the sea. Several other branches from this chain extend to the interior parts of the country.

HOTTERRE, in *Biography*, born in Italy of French parents, was an excellent performer on the flute, and published an elementary work on that instrument that was much esteemed. He likewise published another work, entitled "L'Art de Preluder," the art of preluding.

There was a Mad. Hotterre, about the year 1740, who played well on the violin.

HOTTINGER, JOHN HENRY, was born at Zurich, in Switzerland, in the year 1620. His love of learning was

so remarkable, that he was sent to foreign countries for education at the public expence. He visited several parts of Europe, and at his return was made professor of ecclesiastical history and the Oriental languages. He was appointed chaplain to the embassy of the States-general to Constantinople in 1641; but the magistrates of Zurich would not permit him to accept of it, choosing rather to recal him home, that his learning, talents, and zeal might be employed for the glory and advantage of their own public schools. He was engaged by the elector palatine to restore the university of Heidelberg. While he was preparing for his journey to Holland, he was unfortunately drowned in the river which runs through Zurich, in consequence of the oversetting of a boat, in which he was proceeding to an estate that he had at the distance of two leagues from that city. This event took place in 1667, when he was little more than forty-seven years of age. He was author of forty volumes on different subjects, the titles of the most important are given by Bayle. His son John James was professor of theology at Zurich, and author of many practical pieces.

HOTTONIA, in *Botany*, a genus dedicated, by Boerhaave, to Peter Hotton, the predecessor of that illustrious physician in the botanical chair at Leyden. The successor of Hotton did not bestow this name upon the plant in question without setting forth in a brief though cordial manner the virtues and qualifications of its prototype.—Boerh. Hort. Lugd. v. 1. 206. Linn. Gen. 82. Schreb. 108. Willd. Sp. Pl. v. 1. 812. Mart. Mill. Dict. v. 2. Sm. Fl. Brit. v. 1. 226. Ait. Hort. Kew. v. 1. 197. Juss. 95. Lamarck Dict. v. 3. 137. Illustr. t. 100.—Class and order, *Pentandria Monogynia*. Nat. Ord. *Precie*, Linn. *Lysimachiz*, Juss.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, in five, linear, somewhat spreading segments. *Cor.* of one petal, salver-shaped; tube as long as the calyx; limb divided into five, flat, ovate-oblong, emarginate segments. *Stam.* Filaments five, awl-shaped, short, erect, opposite to the divisions of the corolla, and inserted into the tube; anthers oblong. *Pist.* Germen superior, globose, pointed; style thread-shaped, short; stigma globose. *Peric.* Capsule globular, pointed, of one cell, placed on the calyx. *Seeds* numerous; receptacle globose, large.

Ess. Ch. Corolla salver-shaped. Stamens inserted into the margin of the tube opposite to the segments. Capsule of one cell. Stigma globose. Calyx five-cleft.

Obs. The number of segments in the corolla, and consequently of the stamens, is often much greater than the generic character describes.

1. *H. palustris*. Featherfoil, or Water violet.—Linn. Sp. Pl. 208. Engl. Bot. t. 364. Curt. Lond. fasc. 1. t. 11.—“Stalk bearing many flowers in whorls.”—A native of this country, found in clear streams and ditches, flowering in June and July. *Root* perennial, creeping. *Stems* erect, naked, many-flowered, leafy at the base. *Leaves* bright-green, elegantly and deeply pinnatifid or pectinated, smooth, growing under water. *Spike* dense, of several whorls, more or less distant, one above the other, rising nearly a foot above the surface; partial stalks single-flowered, bracteated. *Flowers* blush-coloured, with six, seven, or eight segments and as many stamens. *Capsule* globular, with many seeds on a globose receptacle.—The beauty and elegance of this plant have been very justly commended both by Dr. Smith in his English Botany, and Mr. Curtis in the *Flora Londinensis*; indeed the former author says “that it may vie with many of the most admired exotics in elegance, having indeed, like some other European aquatics, very much the air of a tropical plant.”

A very beautiful variety of this, with flowers of a deep rose colour, was discovered near Kelmarsh in Northamptonshire by the late Mr. Hanbury, F.L.S.

It appears to us that the three other species mentioned by Willdenow are at best very doubtful. *H. indica*, a plant concerning which the most intelligent botanists have always had doubts, because of its habit, is made into a new genus under the name of *Limnophila* by Mr. R. Brown, *Prod.* v. 1. 442. We are unacquainted with the *ferrata* of Willdenow, or the *sessiliflora* of Vahl; but by their descriptions the former at least seems to be a *Limnophila*, and probably the latter also.

HOTTS, or **HUTTS**, pounces, and round balls of leather stuffed or tied on the sharp ends of fighting-cocks' spurs, to keep them from hurting one another in sparring or breathing themselves.

HOTY, in *Geography*, a town of Sweden, in the province of Blekingen; 21 miles W. of Carlscrona.

HOTZEMPLITZ, a town of Moravia, insulated in Silesia; 20 miles N. of Troppau. N. lat. 50° 12'. E. long. 17° 35'.

HOU, a village of Egypt, on the left bank of the Nile, situated upon the eminence, on which, as it is said, the ancient city of *Diospolis Parva* was built. (See *DIOSPOLIS*.) Rubbish, large bricks, and stones still larger, the remains of a dike, and an arcade, which forms an entrance to a subterraneous conduit, are the sole traces now remaining of the ancient works; 28 miles S. of Girgê. N. lat. 26° 2'. E. long. 31° 27'.

HOVA, a town of Sweden, in West Gothland; 18 miles N. of Mariestad.

HOUAC, or **HOUAT**, an island in the English channel, about eight miles in circumference, defended by a fort; seven miles N.E. of Belle-Isle. N. lat. 47° 24'. W. long. 2° 52'.

HOUAL, or **OUALO**, a kingdom of Africa, situated on the banks of the Senegal, and on the coast of the Atlantic, 90 miles from E. to W., and 18 from N. to S. The soil is rich and fertile, producing in the greatest abundance maize, rice, indigo, tobacco, and cotton; the meadows feed a great number of cattle, large and small, whose flesh is excellent; game is plentiful; birds are numerous and various; and the forests abound with palm-trees. The king of the country assumes the title of “brak” or emperor; and was formerly very powerful, but of late is reduced to a low state, being frequently in want of millet for his support. When he is occasionally roused from his natural indolence, he assembles his courtiers, travels with them through the villages of his kingdom, eats the provisions which he can find; drives away the cattle, and exposes the owners to public sale.

HOUARD DE LA MOTHE, ANTONY, in *Biography*, a law antiquary, was born at Dieppe in 1725, and died at Abbeville in 1803. He was member of the Academy of Inscriptions, and an associate of the National Institute. His works are, 1. “Anciennes Lois des François, conservées dans les Coutumes Angloises,” two vols. 4to. 2. “Traité sur les Coutumes Anglo-Normandes, &c.” four vols. 4to.

HOVAREIN, in *Geography*, a town of the desert of Syria; 70 miles S.W. of Palmyra.

HOUBIGANT, CHARLES FRANCIS, in *Biography*, was born at Paris in 1686, was educated for the church, and became a priest of the Oratory. He distinguished himself for his profound knowledge of the Hebrew scriptures, which he translated into the Latin language with notes, published at Paris in 4 vols. folio 1753. He died in 1783. He was author of many other pieces, among which are “A

Dictionary,

Dictionary, French and Hebrew," 8vo.; "Examination of the Pfaller of the Capuchins;" and "A Translation of bishop Sherlock's Sermons."

HOUCHONG, in *Geography*, a town of Meckley; 18 miles W. of Munnypour.

HOUDAIN, a town of France, in the department of the straits of Calais, and chief place of a canton, in the district of Bethune; six miles S. of Bethune. The place contains 1000, and the canton 13,603 inhabitants, on a territory of 220 kilometres, in 31 communes.

HOUDAN, a town of France, in the department of the Seine and Oise, and chief place of a canton, in the district of Mantes; 10 miles S. of Mantes. The place contains 1700, and the canton 12,392 inhabitants, on a territory of 232½ kilometres, in 31 communes.

HOUDAN, a small island on the North sea, near the coast of Norway. N. lat. 61° 40'.

HOVE, in *Rural Economy*, a term employed to denote the rising or swelling which sometimes takes place in cheeses, soon after they are made, in consequence of their taking on a slight degree of fermentation. The chief remedy in this case is the frequent turning of such cheeses in order to get them dry as expeditiously as possible. See **CHEESE** and **DAIRYING**.

The term is likewise applied to the peculiar swelling in neat cattle and sheep, which proceeds from the feeding too greedily upon some sort of luxuriant green food, such as red clover, &c. See **HOVEN**.

HOVE, in *Geography*, a town of Norway, in the diocese of Drontheim; 25 miles N.W. of Drontheim.

HOUEILLES, a town of France, in the department of the Lot and Garonne, and chief place of a canton, in the district of Nerac; seven miles S. of Castel-Jaloux. The place contains 607, and the canton 4001 inhabitants, on a territory of 335 kilometres, in nine communes.

HOVEL, a town of Westphalia, in the bishopric of Paderborn; six miles N.W. of Lippfpring.

HOVEL, in *Rural Economy*, the name of a kind of shed or low building, which has some part of it constantly open below; but which is covered above. It is useful for young animals of the horse, neat cattle and sheep kinds to run into, as there may be occasion, for protection, during the stormy winter months.

HOVELLING, in *Architecture*, is a method of working up the sides of a chimney, and covering the top with tiles or bricks, set up in a pyramidal form, so that the smoke may escape below the current, when the wind makes over the chimney, or against any one side of it. This is used to prevent the inconvenience arising from adjoining buildings higher than the chimney, or from its being in the eddy of any very lofty building, or in the vicinity of high trees: the covered side must in this case be kept towards the building which occasions the inconvenience.

HOVEN, in *Rural Economy*, a term applied to a peculiar sort of distention or swelling taking place in the stomachs of neat cattle, sheep, and some other animals, in consequence of the sudden extrication of air, proceeding from the decomposition of green succulent food, which they have consumed too greedily and in too large quantities; such, for instance, as red clover, fog, or rank-grass, &c. See **CLOVER**.

In this case, the chief remedy is evidently the discharge of the confined air from the stomach of the animal; which in slight affections may be often accomplished by the use of such substances as have a tendency to retard or stop the progress of the fermentative process, or to force off the flatus. Much benefit in these intentions has been ob-

tained from the giving of large doses of prepared ammonia in mixture with some sort of spirituous liquor; and other similar remedies.

This affection has been supposed, in an able paper in the twenty-ninth volume of Young's Annals, to principally proceed from the distention of the first stomach of the animals by the carbonic acid gas or fixed air that is disengaged from such tender juicy grasses, by their decomposition; the after discharge of it by the gullet being prevented by some sort of contraction occurring about the upper orifice of the stomach. It is added that the dangerous and frequently fatal effects that succeed the distention are not to be ascribed to the air, or juices of the fermented grass, acting as poisons upon the stomach, for moderate quantities of either of them produce no bad effects; besides, the reiterated experience of the grazier has clearly shewn, that cattle, in many instances, are immediately relieved and preserved by the properly stabbing them with a sharp-pointed knife, and letting the air escape in that way. It is, of course, concluded, that cattle may be saved with certainty, if the air be drawn off in due time, without injuring the stomach or bowels. This is suggested as capable of being done with facility, by passing a flexible tube through the gullet into the stomach. A tube of iron wire is advised as the most proper for the purpose, which has about one-sixteenth of an inch diameter, and formed by twisting it round a smooth iron rod three-eighths of an inch in diameter; being afterwards covered with smooth leather. That end of the tube which is to be passed into the stomach, should have a brass pipe of the same size, or rather larger, and two inches in length, firmly fastened to it, and pierced with large holes in sufficient number. In order to prevent the too much bending of the tube in the mouth or gullet in passing it down, an iron wire one-eighth of an inch in diameter, and of equal length with the tube, should be introduced into it; being withdrawn upon the tube entering the stomach. It is found, that the space from the fore teeth, to the bottom of the first stomach of a large sized ox, is about six feet; and a tube five feet nine inches in length has been passed into the gullet of a living ox. A proper tube should consequently be six feet in length to succeed perfectly in all cases. When the tube has been thus introduced it may remain for any length of time, as it does not inconvenience the breathing of the animal. By means of this tube, most part of the elastic and condensed air may be discharged from the stomach; and where necessary, ardent spirits, or any other fluid proper for checking fermentation, be thrown through it into the stomach. In this way, the air is not only more certainly discharged than by the practice of stabbing, but the danger which it causes is obviated; this danger does not arise so much from the irritation of the wound, as the air, and other contents of the stomach insinuating themselves into the cavity of the belly, betwixt the containing parts and the bowels, and thereby creating such a state of inflammation as may prove fatal to the animal.

This tube is equally applicable to sheep, when properly adapted in size; and not less beneficial in the removal of the affection. It is perfectly simple, and readily constructed by any common workman. Such tubes are however sold, ready for use, in London and other places.

Wooden tubes, somewhat of this nature, have been contrived, and brought forward under the encouragement of the Society of Arts, by Mr. Eager, for the purpose of removing this sort of distention in the stomachs of animals. They consist of knobs of wood firmly attached to portions of cane of different lengths, for suiting different sorts of animals, representations of which may be seen in the annexed

plate. It is directed by the inventor, that such beasts as are hoven, or swollen, should be laid hold of by a person by the nostril and one horn, while with one hand an assistant steadily secures the tongue, and with the other pushes the cane quite down into the stomach. Care should be had, not to let the animal get the knob of the tube between his grinders. Some resistance is generally afforded to the tube about the entrance of the stomach, which requires a little additional force in passing it; as soon as a fetid smell is found to be discharged, and the size of the body of the animal to be diminished, nothing further is requisite, as nature will effect the rest. The success of this method has been fully confirmed by different stock-farmers.

The common practice of attempting the removal of this affection by the making an incision or puncture by means of a pen-knife between the short ribs, and fixing a pipe of some sort in it to afford passage to the confined air, securing the whole by adhesive plaster from the effects of the atmosphere, is generally the result of real necessity, but often liable to be attended with fatal consequences, from the want of knowledge, or inexperience of the person who performs the operation. In order to succeed, it should be done on the left side, about the mid-way between the short ribs and the hip-bone, a long slender knife being employed for the purpose, and thrust to the depth of from four to five inches. The operation is sometimes denominated *punching*, and should be always carefully executed.

Oily remedies have likewise been had recourse to in the view of removing these sorts of swellings in the stomachs of animals; such as olive oil, and butter, or lard, melted and blended together, but they can seldom be much depended upon, though asserted to produce relief in a speedy manner by some.

It is a good method to prevent the disease taking place as much as possible, by properly managing the stock in first turning them upon such luxuriant pastures. This should be done, when they are the least pressed by hunger, in order that they may be the soonest satisfied with food; and when there is the least dew upon the grasses. It is also a good practice, in this view, to only let the animals remain a short time at once upon such pastures; and some advise their being frequently driven about in them; though much injury must necessarily be done to the grass in this way. See CLOVER.

HOVEDEN, ROGER DE, in *Biography*, an English historian, who flourished in the reign of Henry II. was born at York. Having received an education suitable to the purpose, he became a professor of theology at Oxford. He was likewise a lawyer, and is said to have served the king in the capacity of chaplain, and also in other confidential offices. It was not till the death of Henry that he applied himself particularly to the compilation of English history. He wrote in the Latin language, commencing his annals with the year 731, the period at which Bede finishes, and coming down to the third year of John, A.D. 1201. His work was printed at London in 1595, in sir Henry Saville's "Collection of ancient English Historians," and at Frankfort in 1601. Of so much authority was it that Edward I. caused strict search to be made in all the libraries for copies of it, in order to ascertain the homage due to the crown of Scotland.

HOVENIA, in *Botany*, so named by Thunberg, in compliment to one of the patrons of his expedition to Japan, David ten Hoven, a senator of Amsterdam.—Thunb. Nov. Gen. 7. Japon. 7. Schreb. 148. Willd. Sp. Pl. v. 1. 1141. Mart. Mill. Dict. v. 2. Juss. 381. Lamarck. Illustr. t. 131.—Class and order, *Pentandria Monogynia*. Nat. Ord. *Dumosa*, Linn. *Rhamnif*, Juss.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, hairy at the base within-side, permanent; its border in five deep, ovate, reflexed, deciduous segments. *Cor.* Petals five, inserted betwixt the segments of the calyx, and equal to them in length, obovate, very obtuse, convoluted, enfolding the stamens. *Stam.* Filaments five, inserted into the base of the calyx, and shorter than its border; anthers roundish, concealed by the petals. *Pist.* Germen superior, roundish; style erect, much shorter than the calyx; stigmas three, obtuse, spreading, a little reflexed. *Peric.* Capsule globose, slightly ovate, with three furrows, three valves, and three cells. *Seeds* solitary, lenticular, very smooth.

Obf. Sometimes, though rarely, the flowers are four-cleft and tetrandrous.

Ess. Ch. Calyx with five deep deciduous teeth. Petals five, convoluted. Stigmas three. Capsule superior, with three valves and three cells. Seeds solitary.

1. *H. dulcis*. Thunb. Jap. 101. (Sicku, vulgò Ken, and Kenpokonas; Kämpf. Amœn. Exot. 8c8. t. 8c9.) A tree, resembling a middle-sized pear-tree, found near Nagasaki in Japan, flowering from June to August, and ripening fruit in November and December. The branches are round, smooth, somewhat zig-zag. Leaves alternate, stalked, ovate, pointed, finely serrated, smooth, with a strong mid-rib, two smaller lateral ones, and many veins. Flowers small, white, in forked, terminal or axillary, panicles, whose stalks, after the flowers fade, become very remarkably juicy, with a sweet red flesh, which is eaten by the Japanese, and compared by Thunberg to the taste of a pear. The partial *flower-stalks*, immediately under the calyx, remain unchanged and slender, sustaining the drooping capsules, which are the size of a pepper-corn, with red seeds.

HOVER GROUND, in *Agriculture*, a term applied in many districts to land which has a light friable soil.

HOUFFALIZE, in *Geography*, a town of France, in the department of the Forests, and chief place of a canton, in the district of Neufchateau, seated on a small river which runs into the Ourte; 30 miles S. of Liege. The place contains 759, and the canton 6266 inhabitants, on a territory of 250 kilometres, in 16 communes.

HOUGH, JOHN, in *Biography*, an English prelate, was born in the year 1650. He received his classical education at the school of Birmingham, whence he was sent to Oxford, where he was elected a demy at Magdalen college in 1669. Here he took his degrees, and afterwards became fellow of his college. In 1676 he proceeded M.A. and having entered into holy orders, officiated some time at North Aston, in the diocese of Oxford. In 1681 he accompanied the duke of Ormond to Ireland, from whence he returned the following year, and in 1685 he was appointed prebendary of Worcester, which promotion was soon followed by his presentation to the rectory of Ternsford, in Bedfordshire. In 1687 he made a firm stand against James II.'s arbitrary attempt to impose a president upon his college. By his noble example the fellows were encouraged to reject his majesty's mandamus in favour of Antony Farmer, a convert to the Popish religion; they made choice of Mr. Hough to that office; and as a majority concurred in electing him, he had spirit enough to accept it, in defiance of the royal order. His election was regularly confirmed by the bishop of Winchester, visitor of the college; and in the same year he was admitted to the degree of doctor of divinity. This bold step of Dr. Hough may be regarded as the commencement of that clerical resistance to the tyrannical proceedings of king James, which contributed not a little to bring about the revolution. The worthy doctor was, however, almost instantly deprived of his presidentship, by the

order of James, who commanded the commissioners to install Dr. Parker, bishop of Oxford, in his room. Twenty-five of the fellows refused to sign a submission to their new president, who, on that account, were, with Dr. Hough, expelled the college, and declared incapable of being admitted to any ecclesiastical dignity or benefice. In the following year, the prince of Orange's declaration was received in England, and the king, with the hope of regaining the affections of the clergy, thought it prudent to recede from his illegal and arbitrary proceedings. An order was accordingly passed to restore Magdalen college to its rights; and Dr. Hough was replaced in his presidency by a commission for that purpose, directed by the king himself to the visitor. After the revolution, Dr. Hough was nominated by king William to the bishopric of Oxford, with which he was allowed to hold the presidency in commendam; in 1699 he was translated from the see of Oxford to that of Litchfield and Coventry; and in 1715 he was offered the archbishopric of Canterbury, which, through diffidence in himself, he declined. In 1717 he was raised to the see of Worcester; and, notwithstanding he was then 67 years of age, he presided over Worcester 26 years, constantly residing in his diocese, and discharging with fidelity and zeal all the episcopal functions. He died in 1743, without pain or sickness, but quite exhausted, full of days and honour. He was a very munificent prelate, and expended on his episcopal palaces upwards of 7000*l.* His private benefactions were very extensive, and his hospitality such as became his station as a father of his people. *Biog. Brit.*

HOUGH, in *Animals*, the name of the bending or ply of the hind leg, which also comprises the part behind but opposite to the ply, usually denominated the *hook*. This point or part, in the horse, should be full, and not too crooked, in order to constitute a well formed leg.

To **HOUGH**, or *cut the houghs*, is to ham-string, or to disable by cutting the sinews of the ham.

HOUGH, *Bony*, is a hard, round swelling, or tumour, growing upon the tip or elbow of the hough.

It generally proceeds from some stroke or bruise; and if neglected till the substance of the swelling becomes hard, like glue, it proves difficult to cure.

HOUGH, in *Nautical Affairs*, is a name for the square head of some sorts of barges, those, for instance, which are used for carrying coals on the Thames, at London.

HOULIERES, ANTONIETTE DU LIGER DE LA GARDE, *DES*, in *Biography*, a distinguished French poetess, was born at Paris in 1658. Her talents for writing French verse were first excited and cultivated by the president Henault. She married Lafon seigneur des Houlieres, soon after which she was arrested at Brussels by order of the Spanish government, and carried as a prisoner of state to the castle of Wilvorden, from thence she was released through the artifice of her husband. She came to Paris, and attracted round her a circle of admirers and men of wit. Becoming a widow she fell into indigent circumstances. At length she obtained a small pension, and solaced herself with study, and acquired the knowledge of the Latin, Italian, and Spanish languages, the best authors in which she read with facility. She died in 1694. Her poems were collected in two volumes in 1724, and reprinted in 1747, in two volumes 12mo. They consist of idylls, eclogues, odes, epigrams, and the tragedy of Genferic. The idylls are accounted the best compositions of the class in the French language. She has been charged with gross plagiarism.

HOULLIER. See **HOLLERIUS**.

HOUMA, in *Geography*, a town of Asiatic Turkey, in the province of Natolia; 21 miles S.E. of Kara-hiser.

HOUMIRI, in *Botany*, Aublet. *Guian.* v. 1. 564. t. 225. (*Houmiria*; Juss. 435.) Red-gum tree, or Red wood, of Guiana. See **MYRODENDRUM**.

HOUN, in *Geography*, a town of Africa, in Fezzan; 10 miles S. of Wadan.

HOUNA, a cape and village of Scotland, on the N. coast of the county of Caithness; two miles W. of Duncansby Head. N. lat. 58° 33'. W. long. 2° 57'.

HOUND, *canis venaticus*, a hunting-dog. See **DOG**.

Hounds may be distinguished, with regard to the manner of their hunting, into such as find out and pursue the game by sight, and the quickness and swiftness of their motion; of which kind are the *gaze-hound*, *agassus*; and *grey-hound*, *canis græius*; the *terrier*, &c. And those which find and pursue the game by the goodness of their smell.

The species of scenting-dogs may be divided further; into *hounds*, simply so called, and *blood-hounds*; each whereof admits of some diversities.

1. As to *hounds*, simply thus called, those which are all of one colour, as white, black, &c. are most valued; then those spotted with red; the white with black ears, and a black spot at the setting on of the tail, are generally esteemed the best for composing a kennel, and are of the best scent and condition; those spotted with dun are less prized, as usually wanting courage and boldness. The black-tanned, or the all liver-coloured, or all white, the true talbots, are best for the string or line; and the grizzled, whether mixed or unmixed, if their hairs are shagged, are usually the best runners. There should always be a couple of these in the pack. *Fallow-hounds* are of good scent, and hardy, not fearing the water; they keep the chace well, without change; but are not so swift as the white; they love the hart above any other chace, having little stomach for the hare, &c. whence they are not so fit for private gentlemen; besides that, they are apt to run at tame beasts.

The *dun hounds* are of a more general use, being fit for all chaces. Their sagacity and fidelity in knowing and sticking to their master's voice and horn, and to none else, are much admired; they also understand each other, and know which are babblers, which liars, &c. They are of different sizes and qualities in the several countries, &c. Mountainous and woodland parts breed a tall heavy sort, called *slow-hounds*; moderate soils, where the champain and covert share pretty equally, produce a middle-sized hound of a nimbler make. The ancients laid a greater stress on colour than the moderns, with whom it is a kind of fixed opinion, that the colour of a good hound, or a good horse, is unimportant.

The marks of a good and fair hound are to be of a middle proportion, rather long than round, the nostrils wide, back bowed, fillets great, haunches large, ham straight, tail big near the reins, and the rest slender to the end, the leg big, the sole dry, and claws large. See **DOG**.

The legs of a good fox-hound, says Mr. Daniel in his "Rural Sports," should be straight as arrows; his feet round, and not too large; his shoulders should lie back; his breast rather wide than narrow; his chest deep; his back broad; his neck thin; his head small; his tail thick and bushy; and if he carries it well, this circumstance will add to his comeliness. Although a small head is mentioned as one of the requisites of a fox-hound, this is to be understood merely in its relation to beauty: for as to goodness, large-headed hounds are in no respect inferior. The middle-sized hounds are reckoned the strongest and best able to endure fatigue. With regard to their shape, it is presumed that they must all agree; and in order to exhibit a good appearance, they should be nearly of a size; if they appear of the

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fame family it will be an addition, and if they are also handsome, they are deemed perfect as far as appearance is concerned. It is of great importance in the shape of a hound that it should exhibit a perfect symmetry: for if this be not the case, he will neither run fast nor bear hard work; much speed is required, and he should possess adequate strength. A prepossession will always occur in favour of that sort of hound to which the sportsmen have been most accustomed: those who have usually hunted with the sharp-nosed, will hardly allow a large-headed hound to be a fox-hound, although both are equally so. Speed and beauty are the chief excellencies of the former; whilst stoutness and tenderness of nose in hunting characterize the latter. Very good sport may be had with unseemly hounds, where a great difference in size and look is apparent, but a gentleman, anxious that his hounds should be complete, will not be satisfied with such a pack: hounds should run well together, and this cannot so well be attained as by uniting as early as possible, those of the same sort, size, and shape. Packs consisting of various kinds of hounds seldom run well together, although they may frequently kill their fox; but it is the "style" of killing which constitutes celebrity among sportsmen. The great excellence in a pack of fox-hounds is the "head" they carry, considered in a collective body: they go fast in proportion to the excellence of their noses and the head they carry, and that pack may be said to go the fastest, which can run ten miles the soonest, notwithstanding the hounds, separately, may not be so speedy as many others. Some hounds creep through the same hole, instead of *topping* the fence, and follow one another in a string, as true as a team of cart-horses. Mr. Beckford, with conciseness and neatness, has described in what manner they ought to be "like the horses of the Sun, *all abreast*." Five and twenty couple of hounds are sufficient at any time to be taken into the field, as being a match for any fox, supposing them steady, and their speed nearly equal. Too many hounds always do more mischief than service. When packs are very extensive, the hounds are seldom sufficiently hunted to be good. Where many hounds are kept, either a large pack must be taken out, or a great number of hounds be left behind: in the first case, too many hounds in the field will probably spoil the diversion, and, secondly, hounds long idle, always get out of wind, and not unfrequently become riotous. Forty couple of hunting hounds will admit of hunting three times a week, twenty-five couple being the usual allotment for the field. Hounds to be steady must be constantly hunted: young ones in particular should never be left at home while able to hunt: the lame, the old, those low in flesh, and such as idleness cannot injure, may be suffered to remain quiet. Hounds that are meant to run well together, should never have too many old hounds amongst them; five or six seasons generally destroying their speed.

The *breeding* of hounds is an object of great importance. In respect of the breed of hounds, no country equals our own; and it is remarkable, that the hounds procured from England should degenerate in another climate. In order to preserve this superiority, the size, shape, colour, constitution, and natural disposition, as well as the fineness of the nose, the stoutness and method of hunting of the dog, from which the breed is taken, should be duly considered.

Nothing is more essential to the having a good pack of hounds, than a proper care of the whelps, and of the parents from which they are to be bred.

The bitches, in particular, should be carefully chosen, and should be such as are the strongest and best proportioned; they must also have large ribs and flanks.

The best season for the coupling of hounds is in January, February, or March; for then they will litter in a good

time of the year, that is, in spring; so that they will be fit to enter in due course, without loss of time, or of the season; for if bitches litter in winter, it is very difficult to bring up the whelps, the cold killing them if there is not great care taken of them. If possible, have no whelps later than April, as late puppies seldom thrive. Of the early ones five or six should be kept; of the late ones, not more than half the number.

The dogs that line the bitches must not be above five years old; for if they are older than this, the young ones will be dull and heavy. Care should be taken to have a proper dog ready the first time of the bitch's going proud; for it is affirmed by many, who say they have experience for it, that whatever kind of dog lines a bitch the first time, there will be one puppy at least in all her succeeding litters that will have some resemblance of him.

On no account breed from a hound that is not stout, that is not tender-nosed, or that is either a blabler or a skirter. Babling is one of the worst faults of which a hound can be guilty; and skirting hounds, where game is plentiful, are always changing, and occasion the loss of more foxes than they kill. It is the judicious *cross* that renders the pack complete: the imperfection on one side may be rectified on the other, and if this be attended to, and a cross hit found, pursue it. The breeding from young dog-hounds after the first season, who have beauty and goodness to recommend them, to see what whelps they get, is a proper trial. Never put an old dog to an old bitch, and take care that those from which you breed be in good health. In breeding, the best bitches should be sent to the best dogs, wherever they may be; and thus those who breed only a few hounds may have a good pack, whilst those who breed many, (if at the same time they understand the business,) reduce it to a certainty.

The first litter of puppies that a bitch brings, are never esteemed so good as the second or third. When a bitch has been lined, and grows big with whelps, she is not to be suffered to hunt among the pack, nor to take any other violent exercise; for that would endanger her casting her whelps; she should be kept up and fed well, and a good place should be provided for her to litter in.

As soon as she has littered, those which are intended to be kept, should be selected out, and the rest immediately drowned. There is great difficulty in choosing the best at this early time; but the general opinion gives it for those which are the lightest, that they will be the swiftest and best as they grow up.

Others take all the whelps away; and having determined what number they will keep, they settle the choice on those which the bitch carries back first to the place where she littered. But all this seems very uncertain. Others select that which was pupped last.

Should one bitch have more whelps than she can rear, some of them may be put to another bitch, and thus a favourite sort may be preserved. In like manner, if only one or two are produced, by shifting those puppies to another bitch, the former will be soon fit to hunt again: but she should be first physicked, and her dugs washed with brandy and water. Should the bitch refuse to take the strange puppies, by killing one of her own, and rubbing the strangers with a little of the blood, she will lick and immediately receive them. The bitches should be well fed with flesh, and have also plenty of milk, nor should the puppies be taken from them till they are able to feed themselves. When the puppies are taken away, the bitches should have three purging balls given them, one every other morning, and plenty of whey the intermediate day.

The

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The whelps must have good fresh straw to lie in, and it must be often changed. They are to be kept in a place where neither the rain nor sun-shine can be troublesome to them; and once a week it will be proper to anoint them all over with a little nut-oil, with some saffron infused in it. This will prevent the flies from annoying them so much as they otherwise would, and will kill worms of all kinds. When they are fifteen days old, it is the custom to worm them, and a week after one joint of their stern should be twisted off. As soon as they can see, they should have milk given them to lap; and at six weeks or two months old they must be weaned, keeping them wholly from the bitch; they must at this time be well kept, but not too high fed; and it is proper to put some cumin seed into their food, to keep the wind out of their bellies.

Many let the whelps of their hounds suck three months, and then send them away to villages to be bred up till they are ten months old, cautioning those people who have the care of them, not to let them eat carrion, nor frequent warrens.

Rye-bread is a very common food for young hounds, and is particularly recommended by many, but wrongly; for it soon passes through them, and gives them very little nourishment. When they are fed constantly with this, in the time of their growing up, they always become narrow-backed; and this is a great fault in this sort of dog; a broad back being one of the greatest recommendations in a hound. Wheat-bread is greatly preferable on all accounts for the food of the young hound, giving him strength and firmness.

At ten months old they are to be taken home, and put into the company of the others, to live as they do, and after a few weeks keeping company with the rest, they are to be coupled, and to go out to hunt.

Hounds are commonly named when first put out, and the usual mode is to name all the whelps of one litter with the same initial letter as that of the dog that got them, or the bitch who bred them. Young hounds should be marked in the side (which is termed *branding* them) with the initial letter of their owner's name; and this will prevent their being stolen, or facilitate the recovery of them when they are lost. Young hounds ought to be fed twice a day, morning and evening. It is advisable not to round them till they are well settled in the kennel, nor in very hot weather, lest they bleed too freely. It may perhaps be better to round them, whilst at walk, when about six months old; if it were done sooner, it would make their ears tuck up. They should not be rounded whilst they have the distemper, as the loss of blood would too much weaken them. (See *Diseases of Dogs*.) If any of the young dogs be thin over the back, or more quarrelsome than others, it will be of use to cut them. Such bitches also as are ill joined, and that are not wanted for the purpose of breeding, should be spayed: they are then constantly serviceable, stouter, and always in better order. Besides, if a pack hunt late in the spring, it will be very short without hounds of the above description. The operation should be performed by a person of skill. There is a difference of opinion whether a bitch should be spayed *before* or *after* she has had a litter of puppies; both periods have answered: the best time is 14 or 15 days after she has taken the dog, and when the puppies just begin to be knotted within her: all the roots of the veins should not be taken away, as her strength and swiftness will be injured by so doing: they should be kept low for several days *before* the operation is performed, and fed on thin meat for some time *after*.

For the method of entering young hounds, see ENTRANCE.

For the terms used with respect to hounds, their noises, &c. see HUNTING.

The hounds mostly used for hare-hunting are the deep-tongued, thick-lipped, broad and long-hung southern hounds: the fleet sharp-nosed dog, ears narrow, deep-chested, with thin shoulders, shewing a quarter cross of the fox-hound: the rough wire-haired hound, thick quartered, well hung, and not too much flesh on his shoulders: and the rough or smooth beagle. Each of these sorts has its excellencies, nor can one be justly commended as superior to the other; the preference must depend on the prevalent inclination of the sportsman.

He that delights in a six hours chace, and to be up with the dogs all the time, should breed from the Southern hounds first mentioned, or from that heavy sort which gentlemen use in the weald of Suffex; their cry is a good and deep bass music, and considering how dirty the country is, the diversion they afford to those who are on foot for a day together, renders them in high estimation; they generally pack well from their equality of speed, and at the least default, every nose is upon the ground in an instant to recover the scent.

In an open country, where there is good riding, the second sort is to be preferred; their tongues are harmonious, and at the same time they go so fast, as to prevent a hare from playing many tricks before them; they seldom allow her time to loiter and make much work; she must run and continue her foiling, or change her ground; if the latter she is soon killed, for fresh ground, especially on turf, is, in some degree, one continued view. It is difficult, however, to procure a pack of fast hounds that run evenly together; some are usually found to tail, and their exertions to keep up to the leading hounds, make them of little use, farther than enlarging the cry, unless when the scent is very warm, then hounds thrown out or tailed, often come up, and hit off the fault.

It is very common for the fleetest hound to be the greatest favourite, but let a hound be ever so good in his own nature, his excellence is obscured in that pack which is too slow for him. At most times there is work enough for every hound in the field, and each ought to bear a part; but this it is impossible for the heavy hounds to do, if run out of wind by the disproportionate speed of a leading hound; for it is not sufficient for hounds to run up, which a good hound will labour hard for, but they should be able to do so with ease, with retention of breath and spirits, and with their tongues at command; it can never be expected that any scent can be well followed by hounds that do not carry a *good head*. It is too frequent a practice in numerous kennels, to keep some for their music, others for their beauty, who at best are silly and trifling, without nose or sagacity; this is wrong, for it is a certain maxim, that every dog which does no good, serves only to foil the ground and confound the scent, by scampering before or interrupting their betters in the most difficult points. Five couple of trusty hounds will do more execution than thirty where half of them are eager and head-strong.

The third sort are scarce, and an entire kennel of them seldom seen; they are of Northern breed, and by many esteemed for the chace of the otter and marten, and in some places are encouraged for that of the fox; but they are bad to breed from, being subject to produce thick, heavy-shouldered dogs unfit for the chace. See BEAGLE.

In the choice of a hound the dog of a middling size is recommended, with his back broader than round: nose large with wide nostrils, chest deep and capacious, fillets great and high, haunches large, hams straight, feet round, the sole hard and dry,

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dry, claws large, ears wide, thin, and more round than sharp, eyes full, forehead prominent, and upper lips thick and deeper than the lower jaw.

Much may be said for or against the several kinds of harriers, but to sum up the whole concisely, staunch hounds of any sort are desirable; whoever has them of nearly equal age and speed, with the further requisites of packing and hunting well together, whether Southern, Northern, Foxtrain, or Beagle, can boast an advantage in the diversion, which few gentlemen (with every attention to their breed) ever attain, but at a great expence of both time and money.

As to the method of breeding hounds, too much care cannot be taken in the choice of the sires from which the whelps are wanted; a very little inattention spoils the litter, which sometimes proves degenerate, although from as high bred a dog and bitch as can be put together, and where every danger of a spurious cross has been completely guarded against.

Young hounds should be entered as near the time when they are a twelvemonth old as possible, and they should be entered at the game they are designed to hunt, as most dogs prefer that game they were first blooded with, and encouraged to pursue. See *Hare HUNTING*.

2. The *grey-hound*, or *leporarius*, or *canis venaticus graius*, might deserve the first place, on account of his swiftness, strength, and sagacity, in pursuing his game; such being the nature of this dog, that he is speedy and quick of foot to follow, fierce and strong to overcome, yet silent, coming upon his prey unawares.

Dr. Caius derives the name of the *grey-hound*, or *gre-hound*, from its being the first in rank among dogs; and that it was formerly so esteemed, appears from the *forest-laws* of King Canute, who enacted, that no one under the degree of a gentleman should presume to keep a grey-hound. The varieties of this species are the *Italian* grey-hound, which is small and smooth, and the *Oriental*, which is tall and slender, with very pendulous ears, and very long hairs on the tail, hanging down a great length. There was formerly a variety, called the *Highland* grey-hound, which is now become very scarce, of a very great size, strong, deep-chested, and covered with long and strong hair. See *DOG*.

The make and proportions required in a good grey-hound, arrived at the age of two years, when he is full grown, are, that he have a fine skin, a body neither too long nor too great, strong and pretty large, a long lean head, with a nose sharp from the eyes downwards, sparkling eyes, with large eye-lids, a long neck, bending like a drake, and sharp teeth, little ears, with thin gristles in them, a straight, broad, and strong breast, a back straight and square with a rising in the middle, his fore legs straight and short, his hind legs long and straight, a round foot with large clefts, broad shoulders, round ribs, with a long space between his hips, fleshy buttocks, but not fat, and a long tail, strong and full of sinews.

The old couplets that describe this species of dogs were exact in the points they recommended, as necessary to form a complete grey-hound.

“ Head like a *snake*,
Neck'd like a *drake*,
Back'd like a *beam*,
Sided like a *beam*,
Tailed like a *rat*,
And footed like a *cat*”

Of this kind, those are always fittest to be chosen among the whelps that weigh lightest; for they will be sooner at the game, and so hang upon it, hindering its swiftness, till the heavier and strong *bounds* come in to offer their assistance;

whence, besides what has been already said, it is requisite for a grey-hound to have large sides, and a broad midriff, that he may take his breath in and out the more easily; his belly should also be small, which otherwise would obstruct the swiftness of his course; and his hairs thin and soft.

The huntsman is to lead these hounds on his left hand, if he be on foot; and on the right, if on horseback. The best time to try and train them to the game, is at twelve months old, though some begin sooner, and enter and try the females at ten months old, which last are said to be generally more swift than the dogs; they should be kept in a slip while abroad, till they see their course; neither should you loosen a young dog till the game has been a considerable time on foot, he being apt, by over eagerness at the prey, to strain his limbs.

The grey-hound is the best used in open countries where there is little covert; in these places there will sometimes be a course after a hare of two miles or more, and both the dogs and the game in sight all the while. It is generally supposed, that the grey-hound bitch will beat the dog in running; but this seems to be an error, for the dog is both longer made, and considerably stronger than the bitch of the same kind.

In the breeding of these dogs the bitch is principally to be regarded; for it is found by experience, that the best dog with a bad bitch, will not get so good puppies as an indifferent dog with a good bitch. The dog and bitch should be as nearly as can be of the same age; and for the breeding of perfect and fine dogs, they should not be more than four years old; an old bitch may be used with a young dog, but the puppy of a young bitch and an old dog will never be good for any thing.

The general food of a grey-hound ought to be chippings or raspings of bread, with soft bones and gristles; and these chippings ought always to be soaked in beef or mutton broth; and when it is nearly cool, some milk should be added; this given the dog morning and evening will keep him in good heart and spirits; he must never have any hard bones given him, because they harden his mouth, and hurt his teeth. If the dog grows sick and weakly upon this diet, then take sheep's heads with the wool on, wash them clean, and boil them in a sufficient quantity of water, to make a very rich and strong broth, and add a large quantity of oat-meal to it. When the meat is very tender, and the broth rich, it is good and fit for the dog; and giving him sometimes the one, and sometimes the other, will very soon recover him. The kennel should be airy, and the door towards the south, the benches $2\frac{1}{2}$ feet, with holes bored to carry off the urine; the straw on the benches should be frequently changed, and the kennel kept extremely clean. See *KENNEL*.

If one of these dogs is to run for a wager, or on any particular occasion, he may be dieted with the following bread: take half a peck of good wheat, and the same quantity of the finest and driest oat-meal; grind these together, and let the meal be sifted very fine; then add as much liquorice and aniseeds, in powder, as will not give it too disagreeable a flavour; and knead the whole into dough with the whites of eggs and new ale. This should be baked in small loaves considerably hard; and when the dog is to be fed with it, it is to be soaked in beef or other broth. He is to be led out to walk half an hour after sun-rise every morning, and half an hour before sun-set every evening, and at his coming in fed with this soaked bread. The proper exercise for a grey-hound is the coursing him three times a week, and rewarding him with the blood of the hare, which will animate him in the highest degree, and encourage him to prosecute his game. But the hare also should ever have fair play; the
should

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should have the law, as it is called, that is, have leave to run twelve score yards before the dog is slipped at her, that he may have some difficulty in the course, and not pick up the game too easily. If he kill the hare he must never be suffered to tear her, but she must be taken from him, his mouth cleaned of the wool, and the liver and lights given him by way of encouragement. Then he is to be led home, and his feet are to be washed with butter and beer, or rather with water and salt, and about an hour after he is to be fed. See ENTRANCE.

When the dog is to be taken out to course, he should have nothing in the morning but a toast and butter, and then he is to be kennelled till taken out to the field. The kennelling of these dogs is of great use, always giving them spirit and nimbleness when they are let loose; and the best way of managing a fine grey-hound is never to let him stir out of the kennel, except at the times of feeding, walking, or courling.

With respect to the swiftness of the grey-hound, the following questions were submitted to a gentleman, whose grey-hounds are known to be as swift as any in the kingdom. Whether the speed of a grey-hound is equal to that of a first rate race horse for the distance of a mile, or for a greater or a smaller distance? and, whether the speed of any hare (supposing the dog and hare to be started without the law usually allowed to the hare in courling) is equal to that of the grey-hound, and to what distance, within that of a mile, the hare could exert that superiority of speed, supposing the hare to be the fastest animal of the two? His opinion was, that upon a flat, a first rate horse would be superior to the grey-hound, but in a hilly country, as in Wiltshire, a good grey-hound would have the advantage; on the second point, that although he had seen many hares go away from grey-hounds, laid close in with them, without a turn, yet he believes a capital grey-hound (so laid in) would not suffer a hare to run from him without turning her. An incident, however, occurred in December 1800, which brought the speed of the grey-hound and race horse into competition. A match was to have been run over Denchard course for one hundred guineas, but one of the horses having been drawn, a mare started alone to make good the bet, and after having gone the distance of about a mile, a grey-hound bitch started from the side of the course, and ran with her the other three miles, keeping nearly head to head, which produced a singular race, and when they arrived at the distance-post, five to four was betted on the grey-hound; when they came to the stand it was even betted. The mare won by about a head.

In February 1800, a brace of grey-hounds in Lincolnshire ran a hare from her seat to where killed, a distance, measuring straight, upwards of four miles, in twelve minutes; during the course there was a great number of turns, which very considerably increased the space gone over; the hare ran herself dead before the grey-hounds touched her; this extensive course, in so short a time, is a strong proof of the strength and swiftness of the hare. Horses have been as much distressed in keeping up for their riders to be a course, as in much longer chaces with hounds. The compiler (says Mr. Daniel) recollects a hare being found close to the town of Bottisham, in Cambridgeshire, and which took away for the six mile bottom, twenty-two horses started, but only one could make a gallop at the conclusion of the course; the hare (who was within fifty paces of the cover) was dead some yards before the grey-hounds, who were obliged to be led to recover them.

The remark made during his troubles, by the unfortunate Charles I. upon the grey-hound's affability, was just as

applied to the animal, and a keen satire upon those that surrounded him; a discourse arose respecting what sort of dogs deserved pre-eminence, and every one allowed it to belong to the spaniel or the grey-hound. The monarch gave his opinion in the grey-hound's behalf, because (said he) it has all the good nature of the spaniel, without the *favouing*.

Many instances might be mentioned of the high spirit and courage, as well as uncommon ardour and velocity of grey-hounds. If it be asked, what is allowed at the present day to be the best breed of them? The blood of the late lord Orford's dogs engrafted into those of Wiltshire and Yorkshire has turned out the best grey-hounds. Allowing for some exceptions, it is generally imagined that grey-hounds crossed from the fore-mentioned blood have proved themselves superior to others.

3. The *gaze-hound*, or *beagle*, is a dog more beholden to the sharpness of his sight, than his nose or smelling; by virtue of which he makes excellent sport with the deer and hare. He is also noted as exquisite in choosing of one that is not lank or lean, but full, fat, and round, which, if it happen to return, and be mingled again with the residue of the herd, he will soon spy out, and leave the rest untouched, never ceasing, after he has separated it from its company, and till he has wearied it to death.

These dogs were much used in the north of England, and on champaign ground; rather than bushy and woody places, and by horsemen more than footmen. If at any time he happen to take a wrong way, upon the usual sign made by his master, he immediately returns, takes the right and ready course, beginning his chace afresh, with a clear voice, and swift foot, following the game with as much courage as at first.

This species, which was the *agastus* of Dr. Caius, says Mr. Pennant, is now lost, or at least unknown to us; and it is very different from the *agastus* of Oppian, which is our *beagle*, which see. See also DOG.

4. The *blood-hound*, or *canis sagax* of Linnæus, differs nothing in quality from the *Scottish slut hound*, derived from the Saxon *slois*, the impression which a deer leaves of its foot in the mire, and *hund*, a dog, saving that it is longer shaped, and not always of the same colour, but sometimes red, fanded, black, white-spotted, &c. though most commonly either brown or red.

Their nature is, that being set on by the voice and words of their leader, to cast about for the fitting of the present game, and having found it, they will never cease pursuing it with full cry, till it be tired, without changing for any other.

They seldom bark, except in their chace, and are very obedient and attentive to the voice of their leader. Those that are really good, when they have found the hare, make show thereof to the huntsman by running more speedily, and with gesture of head, eyes, ears, and tail, winding to the form or hare's muse, never giving over prosecution, and running with a gallant noise.

They have good and hard feet, and stately stomachs, and are very properly denominated *sanguinary* or *blood-hounds*, on account of their extraordinary scent; for if their game be only wounded, so that it escape the huntsman's hands, or if it be killed, and never so cleanly carried away, these dogs, by their exquisite smell, will discover it, and not be wanting, either by nimbleness or greediness, to come at it, provided there be any stains of blood. Nay, though by all the cunning and foresight imaginable, a beast be conveyed away without spot or blood, yet through the roughest and most crooked ways and meanders, this dog will find out the deer-

deer-stealer, and, even in the thickest throng, will, by his smell, separate and pick him out.

The blood-hound was in great request on the confines of England and Scotland, where the borderers were continually preying on the herds and flocks of their neighbours. The true blood-hound, says Mr. Pennant, was large, strong, muscular, broad-breasted, of a stern countenance, of a deep tan-colour, and generally marked with a black spot above each eye. See Dog.

5. The *terrier*, or *tarrier*, only hunts the fox or badger; being thus called, because after the manner of a ferret in searching for coney he leaps into the ground, and affrights or attacks the beasts, either tearing them in pieces, or haling them out by force; or, at least, driving them out of their harbours to be taken in a net, or otherwise. See Dog.

The huntsmen have commonly a couple of terriers, that they may put in a fresh one, as occasion serves, to relieve the other.

The time of entering the terrier is when he is near a twelve-month old: if it be not done within that time, he will hardly be brought to take the earth. This entering and fleshing of them may be performed several ways. First when the foxes and badgers have young cubs, take an old terrier, set him into the ground, and when he begins to bay, hold the young one at the hole or mouth of the earth, that he may listen and hear the old one's bay. The old fox or badger being taken, so that nothing remains within but the cubs, couple up the old ones, and put in the young in their steads, encouraging them by crying *to him, to him*. If they take any cub within, let them do with it what they list; not forgetting to give the old terriers their reward, which is blood and livers, fried with cheese, and some of their grease; shewing them also heads and skins to encourage them.

HOUND-fish, in *Ichthyology*, (see *SQUALUS mustelus*), the smooth hound-fish, or hound-shark.

HOUND Point, in *Geography*, a cape of Scotland in the Frith of Forth, and N. coast of the county of Linlithgow; seven miles W.N.W. of Leith.

HOUND'S Tongue, in *Botany*. See CYNOCLOSSUM.

HOUNDS, in a *Ship*, are those parts of a mast-head which gradually project on the right and left side, beyond the cylindrical or conical surface, which it preserves from the partners upwards. The hounds, whose upper parts are also called cheeks, are used as shoulders to support the frame of the top, together with the top-mast and rigging of the lower mast.

HOUNSLOW, in *Geography*, a town, partly belonging to the parish of Heston, and partly to that of Isleworth, in the hundred of Ossulston, and county of Middlesex, England. It is chiefly supported by its great thoroughfare, and abounds with inns and public-houses for the accommodation of travellers. Here was formerly a market, which is now discontinued: but a fair is held here every Trinity Monday. At the western extremity of the town is a chapel of ease, which formerly belonged to a priory, that was founded in the thirteenth century. The architecture, and some ornaments in the chapel, indicate the age of the building to have been coeval with the foundation of the priory. In the chancel is a monument for Whitelocke Bulstrode, esq. who died November 27, 1724. Adjoining the town is a large tract of waste land called Hounslow-heath. According to a survey made in the year 1546, this heath consisted of 4293 acres, nearly the whole of which was then waste, and almost useless. It continued in this state, till within the last 20 years, but an act of parliament has been recently obtained to inclose and cultivate it. Many acres are

now under tillage, and will consequently be rendered beneficial to the community, and profitable to the proprietors. (See Middleton's Agricultural Survey of Middlesex.) This heath has been noted in the annals of military history, and also in those of Newgate. Vestiges of ancient encampments are still visible, and it is related that the military forces of the kingdom have frequently been assembled and brought to action here. In 1267, the earl of Gloucester, leading the Londoners against king Henry III. assembled them on Hounslow-heath. King Charles's army, after the memorable battle of Brentford in 1642, entrenched themselves here. On the 3d of August 1647, the parliamentary forces, amounting to 20,000 foot and horse, under sir Thomas Fairfax, were assembled on this heath, when the speakers of both houses of parliament were present. Several other instances might be cited. In the year 1793, barracks were erected here to contain above 400 soldiers, with horses, &c. Large gun-powder and oil mills are standing upon the banks of the old river. The former have several times taken fire, and several buildings have been blown up. Lyfons's Environs of London, vol. iii.

HOU-QUANG, a province of China, occupying nearly the centre of the empire; bounded on the N. by Honan, on the E. by Kiang-si and Kiang-nan, on the S. by Quang-si and Quang-tong, and on the W. by Se-tchuen and Koei-tcheou, about 480 miles from N. to S. and 350 from E. to W. The river Yang-tsekiung traverses this province from W. to E., and divides it into two parts, the northern and southern. The greater part of the province is level, watered by lakes, canals, and rivers, and celebrated for its fertility. By the Chinese it is called the store-house of the empire, and among them it is a common saying, that "the abundance of Kiang-si could furnish all China with a breakfast; but the province of Hou-quang alone could supply enough to maintain all its inhabitants." The people boast much of their cotton cloths, simples, gold-mines, wax, and paper made of the bamboo-reed. The capital of the whole province is Vou-tchang, and its population, as stated by sir George Staunton, 27 millions. The northern part of the province contains eight cities of the first class, and sixty of the second and third. The southern comprehends seven of the first class and 54 of the second and third, exclusive of forts, towns, and villages, which every where occur.

HOUR, *ἡρα*, *Hora*, in *Chronology*, an aliquot part of a natural day, usually a 24th, sometimes a 12th.

The origin of the word *hora*, or *ἡρα*, comes, according to some authors, from a surname of the sun, the father of hours, whom the Egyptians call *Horus*. Others derive it from the Greek *ἔρως*, to terminate, distinguish, &c. Others from the word *ουρον*, urine; pretending that Trimegistus was the first that settled the division of hours; which he did from observation of an animal consecrated to Serapis, named the *cynocephalus*, which makes water twelve times a day, and as often in the night, at equal intervals.

An hour with us is a measure or quantity of time, equal to a twenty-fourth part of the natural day, or nycthemeron; or it is the duration of the twenty-fourth part of the earth's diurnal rotation. Fifteen degrees of the equator answer to an hour; though not precisely, but near enough for common use.

The hour is divided into sixty minutes, the minute into sixty seconds, &c.

The division of the day into hours is very ancient; as is shewn by Kircher, *Œdip. Egypt. tom. ii. part ii. class vii. cap. 8.* though the passages he quotes from scripture do not prove it. The most ancient hour is that of the twelfth part of the day. Herodotus, lib. ii. observes, that the Greeks learnt

learnt from the Egyptians, among other things, the method of dividing the day into twelve parts. The astronomers of Cathaya, &c. bishop Beveridge observes, still retain this division. They call the hour *chag*; and to each *chag* they give a peculiar name, taken from some animal: the first is called *xeth*, *moufe*; the second *chiu*, *bullock*; the third *zem*, *leopard*; the fourth *mau*, *bare*; the fifth *chin*, the *crocodile*, &c.

The division of the day into twenty-four hours was not known to the Romans before the Punic war. Till that time they only regulated their days by the rising and setting of the sun.

They divided the twelve hours of their day into four; *viz.* *prime*, which commenced at six o'clock, *third* at nine, *sixth* at twelve, and *nine* at three. They also divided the night into four watches, each containing three hours.

There are divers kinds of hours, used by chronologers, astronomers, dialists, &c.

Sometimes hours are divided into *equal* and *unequal*.

HOURS, *Equal*, are the twenty-fourth parts of a day and night precisely; that is, the time wherein the fifteen degrees of the equator mount above the horizon.

These are also called *equinoctial* hours, because measured on the equinoctial; and *astronomical*, because used by astronomers.

They are also differently denominated, according to the manner of accounting them in different countries.

HOURS, *Astronomical*, are equal hours, reckoned from noon, or mid-day, in a continued series of twenty-four.

HOURS, *Babylonish*, are equal hours, reckoned from sunrise in a continued series of twenty-four.

HOURS, *European*, are equal hours, reckoned from midnight; twelve from thence till noon, and from noon till midnight twelve more.

HOURS, *Jewish*, or *Planetary*, or *Ancient*, are twelfth parts of the artificial day and night.

Hence, as it is only in the time of the equinoxes that the artificial day is equal to the night, it is then only that the hours of the day are equal to those of the night: at other times they will be always either increasing or decreasing.

They are called *ancient* or *Jewish* hours, because used by the ancients, and still among the Jews. They are called *planetary* hours, because the astrologers pretend, that a new planet comes to predominate every hour; and that the day takes its denomination from that which predominates the first hour thereof: as Monday from the moon, &c.

HOURS, *Italian*, are equal hours, reckoned from sun-set, in a continued series of twenty-four.

HOURS, *Unequal*, or *Temporary*, are twelfth parts of the artificial day or night. The obliquity of the sphere renders these more or less unequal at different times; so that they only agree with the equal hours at the times of the equinoxes.

To find the hour of the day, when the latitude of the place, the sun's declination, and his altitude, are given. Thus, suppose the latitude is $51^{\circ} 32'$, the sun's declination 18° north, and his altitude 40° , to find the hour of the day.

The geometrical solution of this problem is performed by projecting stereographically on the plane of the meridian the oblique-angled spherical triangle, which is made by the complement of the latitude, the complement of the sun's altitude, and the sun's distance from the elevated pole. Thus with the chord of 60° (*Plate XVI. Astronomy, fig. 142.*) draw the primitive circle $ZONH$; quarter it; also draw the axis PCP through the poles, and the equinoctial ECQ ; likewise the parallel of declination $D \odot d$ equal 18° ; then draw parallel to the horizon HO , the almucanter or parallel of the sun's altitude $Aa = 40^{\circ}$, to cut the parallel of the sun's declination in \odot , the place of the sun at that time. Then through \odot draw two great circles, one through Z and N the poles of the horizon, and the other through P and P the poles of the equinoctial, as $Z \odot N$, and $P \odot P$; which form the oblique-angled spherical triangle $PZ \odot$; and the angle $ZP \odot$, measured on the line of half tangents, gives the hour of the day from twelve; *viz.* $47^{\circ} 20'$ equal to three hours nine minutes nearly, or to 51 minutes after eight in the morning, or 51 minutes before four in the afternoon. But by spherical trigonometry, having three sides given, that is, ZP , $38^{\circ} 28'$, the complement of the latitude, $Z \odot$, $50^{\circ} 00'$, the complement of the sun's altitude, and $P \odot$, $72^{\circ} 00'$, the sun's distance from the elevated pole (which is the declination added to 90° , when the latitude and declination are of a contrary name; but if of one name, it is the complement of the declination); and the angle $ZP \odot$, the hour of the day, is found by case 11. of spherical trigonometry, as follows.

First add the complement of the latitude, complement of the sun's altitude, and the sun's distance from the elevated pole, into one sum. Secondly, from half that sum subtract the complement of the sun's altitude, noting the half sum, and the remainder; then the complement arithmetical of the sines of the complement of the latitude, and the sun's distance from the pole, and the sines of the said half sum and remainder, added together; the sine of half this sum, doubled, and subtracted from 180 degrees, gives the hour from noon.

| | | | | |
|------|---|---------------------|-------------------|---|
| Side | { | Z P Co. lat. | $38^{\circ} 28'$ | } |
| | | \odot P Co. decl. | $72^{\circ} 00'$ | |
| | | Z \odot Co. alt. | $50^{\circ} 00'$ | |
| | | Sum is, | $160^{\circ} 28'$ | |
| | | Half is | $80^{\circ} 14'$ | |
| | | Co. alt. | $50^{\circ} 00'$ | |
| | | Remainder | $30^{\circ} 14'$ | |

| | | | |
|------------------|---|-------------------------------|-------------------|
| containing sides | { | S. co. ar. | $- 0.206168$ |
| half sum sides | | S. co. ar. | $- 0.021794$ |
| | | $80^{\circ} 14' S.$ | $- 9.993660$ |
| | | remainder $30^{\circ} 14' S.$ | $- 9.702019$ |
| | | sum of the 4 | $- 19.923641$ |
| | | sine half sum | $- 9.961820$ |
| | | | $66^{\circ} 20''$ |
| | | | $66^{\circ} 20'$ |
| | | Which doubled gives | $132^{\circ} 40'$ |

This subtracted from 180° 00' leaves 47° 20' equal to three hours nine minutes nearly, the same as before.

By the same operation you may find the sun's azimuth PZ ⊙, if instead of the complement of the sun's altitude you subtract the sun's distance from the pole, noting the half sum and remainder as before. And the rule will stand thus: to the complement arithmetical of the sines of the complement of the latitude, and complement of the sun's altitude, add the sines of the aforesaid half sum and remainder; then the sine of half the total of these four, doubled, and taken from 180 degrees, gives the sun's azimuth from the north, in north latitude; and from the south, in south latitude.

If the hour of the night is required, the height of some star must be taken. And it is found by adding to, or subtracting the right ascension of that star from that of the sun.

To find the hour of the day or night by the globe, see **GLOBE**.

Hour, in *Mining*, is used by several foreign writers to express $\frac{1}{24}$ th part of the circumference or horizon, or 15° of azimuth; the south and the north being called twelve hours, the east and west six hours; and in describing the course or range of a vein or stratum, they say, if N.W. and S.E., that it has a nine o'clock range, &c. In the same manner, English colliers, speaking of the prevailing dip of the strata, say, that the measures generally dip to the ten o'clock sun; and the collieries of Derbyshire are found by Mr. Farey generally to face the two o'clock sun, or the slines or length-way joints, at right angles to these, tend to the eight o'clock sun, which is either the deep end or the rise-end of the works, according as the strata dip towards the N.W. or S.W. or *vice versa*.

HOURS, *Horæ*, in the *Ancient Mythology*, were certain goddesses, the daughters of Jupiter and Themis; at first only three in number, Eunomia, Dice, and Irene; to which were afterwards added two more, Carpo, and Thallote.

Homer makes them the door-keepers of heaven. Ovid allots them the employment of harnessing the horses of the sun:

“Jungens equos Titan velocibus imperat Horis.”

And speaks of them as standing, at equal distances, about the throne of Sol:

“—— et positæ spatiis equalibus, Horæ.”

The poets represent them as dressed in fine coloured, or embroidered robes, and gliding on with a quick and easy motion. Ovid. *Fast.* v. ver. 218. *Met.* ii. ver. 119. *Stat.* *Theb.* iii. ver. 410.

HOURS, *Horæ*, in the *Romish Church*, are certain prayers performed at stated times of the day; as *matins*, *vespers*, *lauds*, &c.

The lesser hours, are *prime*, *terce*, *sixth*, and *none*. They are called *hours*, or *canonical hours*, as being to be rehearsed at certain hours prescribed by the canons of that church, in commemoration of the mysteries accomplished at these hours. These hours were anciently also called *course*, *curfus*. F. Mabillon has a dissertation on them, entitled *de Curfu Gallicano*.

The first constitution enjoining the observation of the canonical hours, is of the ninth century, being found in a capitular of Heito, bishop of Brazil, directed to his curates, importing, that the priests shall never be absent at the canonical hours, either by day or night.

HOURS, *Prayers of forty*, are public prayers continued for

the space of three days successively, and without intermission before the holy sacrament, to obtain the assistance of heaven on some important occasion.

In these days, care is taken, that the holy sacrament be exposed forty hours, *viz.* thirteen or fourteen hours each day.

Hour-circles, or **HORARY CIRCLES**, in *Astronomy*, &c. are great circles, meeting in the poles of the world, and crossing the equinoctial at right angles; the same as meridians.

They are supposed to be drawn through every fifteenth degree of the equinoctial and equator, and on both globes are supplied by the meridian hour-circle and index. See **GLOBE**.

The planes of the hour-circles are perpendicular to the plane of the equinoctial, which they divide into twenty-four equal parts.

Hour-glass, a popular kind of chronometer or clepsydra, serving to measure the flux of time, by the descent or running of sand out of one glass vessel into another.

The best hour-glasses are those, which, instead of sand, have egg-shells well dried in the oven, then beaten fine and sifted.

Hour-glasses are much used at sea for reckoning, &c.

There is also a sort of hour-glasses, which depend on the flux of water, or some other liquid, more properly called *clepsydra*. See **CLEPSYDRA**.

Hour-lines, on a *Dial*, are lines which arise from the intersections of the plane of the dial, with the several planes of the hour-circles of the sphere, and therefore must be all right lines. See **DIAL**.

Hour-scale, a divided line on the edge of Collins's quadrant, being only of tangents of forty-five degrees each, set together in the middle. Its use, together with the lines of latitude, is to draw the hour-lines of dials that have centres, by means of an equilateral triangle, drawn on the dial-planes. See **DIALLING lines**, and **SCALE**.

HOURA, in *Geography*, a small island near the W. coast of Scotland. N. lat. 57° 56'. W. long. 5° 16'.

HOURIS, in *Modern History*, is a name given by the Mahometans to those females that are designed for the faithful in paradise. These are not the same with whom they have lived on earth, but formed for this purpose, with singular beauty and undecaying charms.

HOURSACK, in *Geography*, a town of Persian Armenia; 150 miles E.N.E. of Erivan.

HOURSAGE, a fee which a carrier, or other person, pays for laying up goods in a house.

HOUSANABUD, in *Geography*, a town of Hindoostan, in Bahar.

HOUSANGUNGE, a town of Hindoostan, in Oude; 40 miles N. of Manickpour.

HOUSATONICK, or **HOOSTONNOC**, signifying in the Indian language “over the mountain,” a river of Connecticut, which has two sources; one in Laneborough, the other in Windsor, both in Berkshire county, Massachusetts. These branches unite in Pittsfield, and the river, after passing through a number of towns, discharges itself into Long island Sound, between Stratford and Milford, in Connecticut. It is navigable about 12 miles to Derby. Between Salisbury and Canaan, this river forms a cataract 150 yards wide, and 60 feet in perpendicular fall. Several useful mills and iron works are erected on the falls of this river.

HOUSE, a habitation, or a building constructed for sheltering a man's person and goods from the inclemencies of the weather, and the injuries of ill disposed persons. Houses differ in magnitude, being of two or three, and four stories,

stories, in the materials of which they consist, as wood, brick, or stone, and in the purposes for which they are designed, as a manor-house, farm-house, cottage, &c.

Ancient Rome consisted of forty-eight thousand houses, all insulated or detached from one another.

For the number of houses, and of inhabitants to a house in England, &c. see the article *EXPECTATION of Life*. See also each county and town, under its respective appellation.

A pleasure house, or country house, is that built for occasional residence, and for the pleasure and benefit of retirement, air, &c. This is the *villa* of the ancient Romans; and what in Spain and Portugal they call *quinta*; in Provence, *casine*; in some other parts of France, *closerie*; in Italy, *vigna*.

The citizens of Paris have also their *maisons de bouteilles*, *bottle houses*, to retire to, and entertain their friends; which in Latin might be called *micæ*; the emperor Domitian having a house built for the like purpose, mentioned under this name by Martial, lib. ii. ep. 59.

It is a thing principally to be aimed at, in the site or situation of a country house, or seat, that it have wood and water near it.

It is far better to have a house defended by trees than hills; for trees yield a cooling, refreshing, sweet, and healthy air and shade, during the heat of the summer, and very much break the cold winds and tempests from every point in the winter. The hills, according to their situation, defend only from some certain winds; and if they are on the north-side of the house, as they defend from the cold air in the winter, so they also deprive you of the cool refreshing breezes, which are commonly blown from thence in the summer. And if the hills are situate on the south side, they then prove also very inconvenient.

A house should not be too low seated, since this precludes the convenience of cellars. If you cannot avoid building on low grounds, set the first floor above the ground the higher, to supply what you want to sink in your cellar in the ground; for in such low and moist grounds, it conduces much to the dryness and healthiness of the air to have cellars under the house, so that the floors be good and cieled underneath. Houses built too high, in places obvious to the winds, and not well defended by hills or trees, require more materials to build them, and more also of reparations to maintain them; and they are not so commodious to the inhabitants as the lower-built houses, which may be built at a much easier rate, and also as complete and beautiful as the other.

In buildings or houses not above two stories with the ground-room, and not exceeding twenty feet to the raison-place, and upon a good foundation, the length of two bricks, or eighteen inches for the heading course, will be sufficient for the ground-work of any common structure, and six or seven courses above the earth to a water-table, where the thickness of the walls is abated, or taken in, on either side the thickness of a brick, namely, two inches and a quarter.

For large and high houses, or buildings, of three, four, or five stories with the garrets, the walls of such edifices ought to be from the foundation to the first water-table three heading courses of brick, or twenty-eight inches at least; and at every story a water-table, or taking in on the inside for the summers, girders, and joints, to rest upon, laid into the middle, or one quarter of the wall at least, for the better bond. But as for the innermost or partition wall, a half brick will be sufficiently thick; and for the upper stories, nine inches, or a brick length, will suffice.

The parts, proportions, &c. of the houses in London, are regulated by statute. See *BUILDING*, and article *FIRE-cocks*.

Every man has a right to air and light in his own house; and therefore if any thing of an infectious smell be laid near the house of another, or his lights be stopped up and darkened by buildings, &c. they are nuisances punishable by our laws; but no action lies for merely obstructing the opening of a prospect. If a man's house be attacked with intent to kill, and the owner or his servants kill the thieves in defending him and his house, this is not felony, and incurs no forfeiture. One man may compel another to repair his house in several cases, by the writ *de domo reparanda*. The doors of a house may not be broke open on arreits, except in cases of treason or felony, &c. The riotously pulling down of a house is felony excluded clergy. Stealing lead, or iron bars, or rails fixed to houses, &c. is felony punishable by transportation, by 4 Geo. cap. 32. The hundred is liable to damages by the burning of houses. 9 Geo. cap. 32. See *ARSON*, *BURGLARY*, &c.

HOUSE-cricket, in *Entomology*. See *GRYLLUS domestica*.

HOUSE, Hot. See *HOT-house* and *STOVE*.

HOUSE, Green. See *GREEN-HOUSE*.

HOUSE, Ice. See *ICE*.

HOUSE-lamb, in *Rural Economy*, a name given to that sort of lamb which has been reared and fattened in the house. See *LAMB-suckling*.

HOUSE, Summer, a little edifice erected at the corner of a garden, and contrived so as to let air in on all sides; or to exclude it, as you find proper.

HOUSE, Town, or Hall, is a place where the officers and magistrates of a town or city hold their meetings, for the due administration of their laws and policy. See *HALL* and *GUILD*.

HOUSE, Work. See *WORK-house* and *BRIDEWELL*. See also the article *RASPIHYS*.

HOUSE of Correction. Justices of the peace in sessions are to make orders for erecting or enlarging houses of correction, and for the maintenance and government of the same, and for the punishment of offenders committed thither; on presentment of the grand jury, or of a justice on his own view or knowledge, that such houses are wanted. (7 Jac. I. c. 4. 17 Geo. II. c. 5. 14 Geo. II. c. 33. 22 Geo. III. c. 64. 24 Geo. III. sess. 2. c. 55.) In every county of England there shall be a house or houses of correction, built at the charge of the county, with all conveniences for the setting of people to work. The expence of building, repairing, and purchasing land, &c. for houses of correction, and maintaining them, shall be defrayed by order of the justices in sessions, by the monies raised in the same manner as the general county-rate; and when the amount thereof shall exceed one-half of the amount of the ordinary annual assessment for the same, (computed at a medium for the last five preceding years), they may borrow on mortgage of the said rates, any sum not less than 50*l.* nor more than 100*l.* each, ordering the interest to be paid off yearly, and so much of the principal sum as shall at least be equal to the interest, until the whole shall be discharged; provided that the whole money borrowed be fully paid within 14 years from the time of borrowing the same. (17 Geo. II. c. 5. 22 Geo. III. c. 64. 24 Geo. III. sess. 2. c. 55.) The justices at their quarter sessions shall nominate one or more justices, within their respective districts as visitors and inspectors, who shall report to the next quarter sessions. And the justices in sessions are to appoint governors or masters of such houses of correction, and their salaries, &c. which are to be paid quarterly out of the county rate. They may also allow such

governors some proportion of the profits earned by the prisoners. The salaries shall be fixed with a reference to the quantity of work done. (22 Geo. III. c. 64. 31 Geo. III. c. 46.) These governors are to set the persons sent on work, and to punish offenders (except by whipping); and in case of repetition of offences to report to the visiting justices, who shall order such offenders to be punished, either by moderate whipping, repeated whippings, or close confinement for any term not exceeding one month. Governors are to yield a true account every quarter-sessions of persons committed to their custodies; and if they suffer any to escape, the justices may fine them.

The justices, at some general or quarter-sessions, at which five justices, at the least, shall be present, may make such rules and orders for receiving, separating, classing, dieting, clothing, maintaining, employing, reforming, governing, managing, treating, and watching offenders during their confinement in penitentiary houses, according to 19 Geo. III. c. 47. (See *PENITENTIARY Houses*, and *TRANSPORTATION*.) Such rules and orders are to be submitted to the judges of assize, &c. 31 Geo. III. c. 46. If persons ordered to hard labour shall escape, or be assisted in escaping, or rescued, every such offence shall be punished in the same manner as the like offence would be punished by 19 Geo. III. c. 74. concerning penitentiary houses. Separate apartments shall be provided by 22 Geo. III. c. 64. By the same act, the governor or keeper of every house of correction shall employ persons, not committed to hard labour, in some work that is not severe, and allow them half their earnings, to be paid at the time of their discharge. The justices in sessions may also appoint, at pleasure, a minister of the church of England, residing near the house of correction, to perform divine service there every Sunday, and appoint him a salary not exceeding 20*l.* a-year. No governor or assistant shall sell, or be licensed to sell, or have any benefit from the sale of any wine, ale, beer, spirituous or other liquors; nor shall such liquors be brought into the house of correction, to be drank there, unless for a medical purpose, by a written direction, under the hand of the apothecary or surgeon attending such house, under a penalty of 10*l.* The master shall deliver to the justices, at every general quarter-sessions, a written account of the persons in custody, with the offence of each, time of commitment, distinguishing the age and sex of those committed to hard labour, the business in which they have been employed, and the behaviour of each during confinement.

The house of correction is for the employing and punishing of idle and disorderly persons, parents of bastard children, beggars, servants running away, trespassers, rogues, vagabonds, &c. Poor persons refusing to work, are there to be whipped, and set to work and labour; and any person who lives extravagantly, having no visible way to support himself, may be sent to the house of correction, and set to work there, and may be kept there, until he gives the justice satisfaction in respect to his living, but not to be whipped. A person ought to be convicted of vagrancy, &c. before he is ordered to be whipped.

Whereas doubts may arise where authority is given to any justice or justices, to commit offenders to the house of correction, for offences cognizable before them out of sessions, how long offenders may be there detained, and in what manner treated, when the time and manner of their punishment is not by law expressly limited; it is enacted by 17 Geo. II. c. 5. that when any offender shall be committed as aforesaid, by virtue of any law in being, or to be made, and the time and manner of their punishment are not expressly limited, the said justice or justices shall commit such offenders to the

house of correction, there to be kept to hard labour until the next general or quarter-sessions, and until discharged by due course of law: and two justices (of whom the justice who committed him to be one) may discharge the said offender before the sessions if they see cause: and if he shall not be so discharged, the said sessions may either discharge him or continue him further, not exceeding three months. A table of rules and orders for the government of houses of correction, is ordered to be fixed in some conspicuous part of such houses by 22 Geo. III. c. 64, of which the following is a copy:

“ Rules, orders, and regulations to be observed and enforced at every house of correction provided and established, or to be provided and established, under the authority of the acts of the 7th year of the reign of his late majesty king James I. the 17th of king George II. and the 22d of king George III.

“ 1. That the several persons who shall be committed to the house of correction to be kept to hard labour, shall be employed (unless prevented by ill health) every day during their confinement (except Sundays, Christmas day, and Good-Friday), for so many hours as the day-light in the different seasons of the year will admit, not exceeding twelve hours, being allowed thereout to rest half an hour at breakfast, an hour at dinner, and half an hour at supper, and that the intervals shall be noticed by the ringing of a bell.

“ 2. That the governor of each house of correction shall adapt the various employments, which shall be directed by the justices at their quarter-sessions, to each person in such manner as shall be best suited to his or her strength and ability, regard being had to age and sex.

“ 3. That the males and females shall be employed, and shall also eat and be lodged in separate apartments, and shall have no intercourse or communication with each other.

“ 4. That every person so committed shall be sustained with bread, and any coarse but wholesome food and water; but persons under the care of the physician, surgeon, or apothecary, shall be sustained with such food and liquor as he shall direct.

“ 5. That the governor, and such other persons (if any) as shall be employed by the justices to assist the governor, shall be very watchful and attentive in seeing that the persons so committed are constantly employed during the hours of work; and if any person shall be found remiss or negligent in performing what is required to be done by such person to the best of his or her power and ability, or shall wilfully waste, spoil, or damage the goods committed to his or her care, the governor shall punish every such person in the manner hereafter directed.

“ 6. That if any person so committed shall refuse to obey the orders given by the governor, or shall be guilty of profane cursing or swearing; or of any indecent behaviour or expression; or of any assault, quarrel, or abusive words, to or with any other person: he or she shall be punished for the same in the manner hereafter directed.

“ 7. That the governor shall have power to punish the several offenders for the offences herein before described, by closer confinement; and shall enter in a book, to be kept by him for the inspection of the justices at the quarter-sessions, and the visiting justice or justices, the name of every person who shall be so punished by him, expressing the offence, and the duration of the punishment inflicted.”

Bridewell is a prison for correction in London, and offenders may be sent thither. See *BRIDEWELL* and *HOSPITAL*.

HOUSE is also used for a convent or monastery.

Regular priests give the name houses to the places they reside

reside in, and not that of convents or monasteries, which properly belong to simple friars. Thus we say the Jesuits' house, and the Barnabites or Theatins' house.

The Jesuits have both professed houses, and colleges for novices, which they call *houses of probation*.

They have also *houses of retreat* for spiritual exercises, where they receive secular persons and ecclesiastics disposed to practise the same with them for eight or ten days.

HOUSE is also used for one of the estates of the kingdom assembled in parliament.

Thus we say, the house of lords, the house of commons, &c. See COMMONS, PARLIAMENT, and PEERS.

HOUSE is also used for a noble family; or a race of illustrious persons issued from the same stock. See GENEALOGY.

In this sense we say, the house or family of the Stuarts, the house of Bourbon, the house of Hanover, of Austria, of Lorraine, of Savoy, &c.

HOUSE, in *Astrology*, a dodecatemery, or 12th part of the heavens.

The division of the heavens into houses is founded on this, that the stars and planets, when found herein, are supposed to have certain influences, either good or evil, upon sublunary bodies; and to each house is assigned its particular virtue or influence; upon the consideration whereof they draw horoscopes. See HOROSCOPE.

This division is made by six great circles, called *circles of position*, which cut each other in the common intersection of the meridian and horizon, in the ordinary way of domifying, which is that of Regiomontanus: for the ancients had three other ways.

These circles divide the equator into 12 equal parts, of 30 degrees each, without any regard to the zodiac. The horizon and meridian are two circles of the celestial houses, which divide the heavens into four equal parts, each whereof comprehends three houses. There are six above the horizon, and as many below it; and six eastern and six western houses.

The scheme or figure of the heavens consists of 12 triangles, which are likewise called houses; wherein are laid down the stars, signs, and planets, comprised within the respective spaces of the circles of position.

Each planet has two certain houses, whereing they say it exerts itself with peculiar vigour. Leo is the sun's house, and Cancer that of the moon; Capricorn is Saturn's, &c.

Some call the houses dodecatemories; but that name is more immediately appropriated to the twelve signs or divisions of the zodiac. See DODECATEMORY.

The Astrological houses have their particular names according to their qualities. The first is the *house of life*, being the ascendant, and containing five degrees above the horizon, the rest beneath it; the second is the *house of riches*; the third, the *house of brothers*; the fourth, in the lowest part of heaven, the *house of relations*, and the angle of the earth; the fifth, the *house of children*; the sixth, the *house of health*; the seventh, the *house of marriage*, and the angle of the west; the eighth, the *house of death*, and upper gate; the ninth, the *house of piety*; the tenth, the *house of offices*; the eleventh, the *house of friends*; and the twelfth, the *house of enemies*.

It is popularly, and as it were poetically, said, that the sun had 12 houses, by which are meant the 12 signs, though in reality it has only one sign, *viz.* Leo: besides, the division of houses is accommodated to the equator, and not the zodiac.

They begin numbering the houses with the ascendant, and pass them to the *imū cœli*; so that the vertical point makes the beginning of the tenth.

HOUSES, *Differences of*, in *Heraldry*. See DIFFERENCES.

HOUSE-bote, *Estovers*, in *Law*; or an allowance of timber out of the lord's wood, for the repair and upholding a house or tenement.

Some make house-bote two-fold, *viz.* *Estoverium edificandi & ardendi*. See ESTOVERS.

HOUSE-breaking, or *House-robbing*, the robbing or plundering a man in some part of his house, or his booth, or stall, in a fair or market; the owner, or his wife, children, or servants, being within the same.

This was made felony by stat. 23 Hen. VIII. and 3 Ed. VI. but it is since also made felony, though none be within the house, 26 Eliz. See BURGLARY and LARCENY.

HOUSE-burning. See ARSON.

HOUSE-coal, in *Mining*, is applied to such sort of coals, as are adapted, and in general used as firing by the inhabitants of coal districts, called also *fire-coal*, to distinguish them from lime-coal, engine-coal, *steck*, &c. which are refuse, or stinking-coal, used chiefly for burning lime, working steam-engines, &c.

HOUSE-island, in *Geography*, one of the Shetland islands, about seven miles long and one broad. N. lat. 60' 4°. W. long. 1° 35'.

HOUSE painter. See PAINTING.

HOUSE of Recovery, a hospital for the reception of persons labouring under infectious fever, or typhus, with a view not only to the cure of the disease, but to the suppression of the contagion.

This very important institution, of which many examples are now to be found in England and Ireland, is of very recent date; the first house of the kind having been established at Manchester in the year 1796, when this appellation was adopted, as being less alarming to the feelings of the poor, and of the public in general, than that of *fever-house*. For the original suggestion of such establishments, and for the satisfactory documents in proof of the safety and advantages which they afford, deduced from a long and philosophical investigation of the nature of contagion, the country is indebted to Dr. Haygarth. The principles on which he recommended the plan, had been inferred by so cautious an induction from observation and experiment, that every instance of the practical application of them has served but to corroborate their truth.

It is well known to those who have attended to the history of epidemic diseases, that the various contagious fevers, which have been denominated the plague, putrid, spotted, and malignant fevers, have, together with the small-pox, measles, and scarlet fever, been the principal scourges of mankind, since history has afforded us any accurate records on the subject; and that the ravages of pestilence in general have been confined to the crowded population of large camps, towns, and cities. (See EPIDEMIC.) With the origin of the small-pox, measles, and scarlet-fever, we are altogether unacquainted; they seem to be propagated only by a specific contagion, generated in the bodies of those who labour under the diseases. But the origin of the other fevers above specified has been traced, we apprehend, with a clearness that admits of no doubt, to the effluvia generated from the accumulated filth, and the uncleanly persons and habitations, abounding in large and populous cities. (See HEALTH, *Public*.) And although it has been shewn, that the frequency and extensive range of these pestilential fevers have been curtailed, and some of them actually annihilated, by the system of public and private cleanliness and ventilation adopted in modern times; yet until the abodes of poverty can be rendered airy and cleanly, (a consummation scarcely to be hoped for,) contagion will continue to be generated under certain circumstances, and will necessarily

HOUSE OF RECOVERY.

necessarily tend to propagate itself to an indefinite extent. And such, in fact, has been the actual state of the case, in all large and crowded towns, until within a very few years. The inhabitants of the cellars and garrets in the dirty alleys and lanes in Manchester, Liverpool, London, Dublin, &c. &c. have been found to suffer severely from the generation of infectious fever in their apartments, or from the ready propagation of it, whenever introduced.

From the nature of the accommodation of the poor in their lodging-houses, from their inability to preserve cleanliness, and from the constant intercourse between the inhabitants of the different apartments of these houses, not only is contagious fever generated; it is also readily propagated, and it becomes an irremovable inmate, as it were, of the houses. "When a fever either arises in, or is introduced into the house of a poor person, every circumstance favouring its progress, it generally attacks the family in succession: their clothes, and the woollen and cotton part of their furniture become infected, retain the infection tenaciously, and are capable of communicating the disease for a long time. These they can neither afford to purify or destroy. Thus their dwellings and persons continually breathe contagion; and where this is the situation, not of one family only, but of a great number, it is hardly possible to prevent a communication of the disease to the families of the rich, among whom it would never have been produced." (Ferriar's Med. Hist. and Reflect. vol. i. p. 243.) The same author, speaking of the situation of some of these habitations of the poor in Manchester, observes, "In those houses a very dangerous fever constantly subsists, and has subsisted for a considerable number of years. I have known nine patients confined in fevers at the same time in one of these houses, and crammed into three small dirty rooms, without the regular attendance of any friend or even of a nurse. Four of these poor creatures died, absolutely from want of the common offices of humanity, and neglect in the administration of their medicines. As soon as one dies, or is driven out of his cell, he is replaced by another, who soon feels, in his turn, the consequences of breathing infected air. In most of these places lodgers are received; the consequence is a perpetual succession of fever patients among them." That these representations are faithfully correct, those who have had an opportunity of visiting the sick poor in this metropolis can evince. We have seen the inhabitants of the same house attacked, several successive times, by the influence of their own contagion. Even the convalescents, from their confinement in the midst of infection, have frequent relapses, so that the disease would sometimes continue on the same spot for several months together.

It must be obvious, that these nests of contagion are constant sources of danger to the public, and that diseases may be communicated even to distant quarters of the town, by the sale of clothes, impregnated with it in its most active form (see Dr. Willan on Scarlatina), and by the public coaches, &c. And it must be not less clear, that the mere removal of a few infected individuals to the public hospitals, is altogether inadequate to strike at the root of the evil, although it may preserve the lives of some of the individuals thus removed. A striking illustration of these points is afforded in a case mentioned by the late Dr. T. A. Murray. He was called upon to visit a poor man in a close alley leading from Shoe-lane, who was ill of typhus-fever. This patient occupied a back room, on the ground floor, together with his wife and five female children, the eldest of whom was sixteen years of age, the youngest two. There was but one bedstead in the room, but some bedding lay on the floor, between this and the fire-place; it was lighted by one

window, which, from its construction, could not be opened. The room, the bedding, and the persons of the inhabitants were all filthy and offensive in the highest degree. It appeared, however, that the mother had been first attacked, in consequence, as she supposed, of having visited a person who died of the fever in one of the upper apartments. She had immediately obtained admission into an hospital, and remained there until she thought herself able to return to her family; though still retaining in her clothes, or person, enough of the contagion to infect them. Soon after her return her husband was attacked by the fever; then the second and third of her daughters; afterwards the eldest and the two youngest. Medicine, as might have been foretold, was of very little service in such a situation. The father of the family died on the fourth day after he was visited. The children continued to linger under the disease, when this report was made. The eldest of them was conveyed to a hospital in a hackney coach, having, until the time of her removal, lain by the side of her father, on that part of the infected bed which the dead body of their father had previously occupied. See Remarks on the Situation of the Poor in the Metropolis, as contributing to the Progress of Contagious Diseases, by Dr. Murray, published by the Society for bettering the Condition of the Poor, in 1801. p. 27.

On contemplating scenes like this, and considering the danger thence resulting to the public, and the misery inflicted on the families of the poor, we cannot but highly approve the nature of an institution, which has for its object at once the removal of the patients from such pestilential habitations (by means which secure the public), to a *House of Recovery*, and also the purification of the infected apartments, and the destruction of the contagion, in the clothes and furniture, and whatever else may be imbued with it. Such are the purposes accomplished by the institution of Houses of Recovery; and we shall briefly state the grounds upon which such establishments were proposed, the methods in which they have been executed, and the happy results which have accrued from them.

The first suggestion of the advantages of the establishment in question was made by Dr. Haygarth, at Chester, about the year 1772, from a consideration of the nature of contagion, and of the mode and limits of its propagation. His own observations, supported by those of sir John Pringle, Dr. Lind, and others, had taught him that contagious effluvia are particularly active in close and unventilated apartments; but that, in the open air, or when diluted by the free admission of fresh air into the infected room, they become comparatively inert and harmless, and might be breathed for a long time with perfect impunity; and that even the concentrated infection of a close room might be respired for a short time without producing fever, especially at a little distance from the person deceased. It had been shewn too, by Dr. O'Ryan's experiments at Montpellier, that the contagion of small-pox was limited in its operation to the distance of a few feet from the person infected; and by Dr. Ruffell, Dr. Mertens, &c. that even the contagion of the plague was harmless at a similar distance, particularly in the air of well ventilated places. (See CONTAGION, where the evidence of these statements is adduced.) In short, Dr. Haygarth was irresistibly led to the conclusion, that contagion is not communicated to any distance through the air, and that, in a well ventilated and clean apartment in a house or hospital, persons affected with contagious fever might be received, without any risk to the occupants of other apartments in the same building, much less to the inhabitants of neighbouring or even adjoining houses. In consequence of these well-founded opinions, a

HOUSE OF RECOVERY.

fever-ward was opened in the infirmary at Chester, in the year 1773, with the most beneficial effects; *i. e.* two wards were set apart for the reception of patients labouring under typhus-fever, and were continued open without any injury to the other wards of that hospital, or to the neighbourhood, but with a great diminution of contagious fever in the town.

For, in the mean time, the attention of the officers of the infirmary was directed to the apartments from which the sick had been removed; the furniture, clothes, &c. which had been about the persons of the patients, were purified, by washing, fumigation, &c. and the rooms cleaned and white-washed. The patients, after their recovery in the fever-wards, were sent home to their families in clean garments; being thus rendered secure from the chance of re-infection on their arrival, and incapable of communicating it to their inmates.

The success of this establishment led to the opening of fever-wards in the infirmary at Liverpool, under the direction of the late Dr. Currie, where the experiment was attended with the same success. The inhabitants of Manchester, from the pressing representations of Dr. Ferriar, were induced to form a separate establishment, as already stated, in 1796; and similar houses have been instituted in several of the large towns both in England and Ireland, especially at Dublin, Waterford, Cork, &c. in London, Leeds, and other places; in all of which the principles of Dr. Haygarth have been invariably confirmed, and the most substantial benefits conferred upon the inhabitants.

Regulations of a House of Recovery.—The following are the principal regulations adopted in the management of the House of Recovery, in Gray's-inn-lane Road, London, which was opened in 1802, under the patronage of the Society for bettering the Condition of the Poor; they are chiefly taken from those of the establishment at Manchester. See Dr. Ferriar, loc. cit. vol. iii. p. 66.

1. The admission of patients is left entirely to the physician, who, as soon he has ascertained the state of the person recommended, gives an order for that purpose; whence no time is lost by searching for the recommendation of governors, or by stated periods of admission, as in the ordinary hospitals.

2. A sedan chair, or covered litter, provided with a moveable lining, is kept at the house, in which all persons are carried thither at the expence of the institution; so that no public carriages can be thus infected.

3. All patients on admission have their infectious clothes changed for clean linen, and are washed with lukewarm water. The clothes brought into the house with them are properly purified and aired. During their continuance in the house, all linen and bed-clothes, on being removed from the bodies of the patients, are immediately immersed in cold water, and all discharges are removed from the wards without delay.

4. The floors of the wards are washed daily near the beds, and twice a week generally; and fumigations with nitre and sulphuric acid are frequently employed; the walls are white-washed once every three months with quick-lime, fresh slaked in water, and while it continues bubbling and hot. The bedsteads are of iron, without curtains, and the beds stuffed with straw for the convenience of being frequently changed.

5. The fumigation, just mentioned, the efficacy of which in destroying contagion, has been satisfactorily proved by M. Morveau, Dr. Johnstone, and Dr. C. Smyth (see FUMIGATION), is employed in the apartments which the patients have left; their walls are white-washed with hot lime, where that operation is deemed necessary; and such articles of clothing as are not capable of being purified are de-

stroyed, and replaced at the expence of the institution. (See the Reports of the Institution for the Cure and Prevention of Contagious Fever in the Metropolis. Ferriar, Med. Hist. and Reff. vol. iii. p. 66.)

The advantages of such institutions have become almost immediately apparent wherever they have been adopted. Great apprehensions were at first entertained (founded entirely on popular prejudices and mistakes in regard to the nature of contagion), that the neighbouring dwelling-houses might be infected through the air, where a house of recovery was established. But it was soon perceived that no such infection took place; but, on the contrary, that the neighbourhood of the houses (at Manchester for instance), was the first part of the town to be purified from the contagion which it heretofore cherished. This apprehension was also strongly expressed in London, where the House of Recovery was originally a private dwelling-house, standing *in a row*, and of course *contiguous* to dwelling-houses on both sides. But the experience of nine years has completely removed all the fears of the adjoining inhabitants.

In respect to the establishment at Manchester, it is stated that "the beneficial effects of the House of Recovery are almost beyond belief; the facts are, however, established by authentic documents. The number of fever patients in the pile of buildings *in the neighbourhood of the House of Recovery*, for the two preceding years and eight months, were 1256, something more than an average of *four hundred* a year; those in the same district, from July 1796 (a period commencing two months after the establishment of the House of Recovery), to July 1797, being twelve months, were only *twenty-six*."

Again, "in January 1796 (before the establishment of the House of Recovery), the whole number of home-patients visited by the physicians of the Manchester Infirmary was 296, of which 226 were cases of fever; in January 1797, the number of their home-patients was 161, and of these only 57 were cases of fever." See Reports of the Society for bettering the Condition of the Poor.

Both at Manchester and at Dublin (where the number of fevers is much greater, and the establishment upon a more extensive scale), the diminution of fevers has been so great, as to enable those institutions to comprehend a much wider district than in the outset. In London, many of the alleys and courts near Gray's-inn-lane, Saffron-hill, and other crowded districts, in which contagious fever was generally existing, have been, for several years, since the purifying measures of the House of Recovery were put in execution, altogether free from fever.

Dr. Ferriar remarks, while enumerating the benefits derived from these institutions, "I can also perceive, that a salutary impression has been made upon the minds of the poor respecting the utility of cleanliness in their houses. The idea of fever comprehends, among them, that of ruin to their circumstances, and desertion by their neighbours; it may, therefore, be expected, that they will catch at every means within their reach to avoid so dreadful an evil." (Loc. cit.)

Notwithstanding the ample and demonstrative evidence which now exists of the advantages and perfect security with respect to the public, of these institutions, the prejudiced and erroneous notions of the communication of contagion, through the air, continue to prevail with great numbers of persons, and to prevent the establishment of fever-wards and houses of recovery. Those who wish for satisfactory proofs upon this subject, may consult Dr. Haygarth's Letter to Dr. Percival on the Prevention of contagious Fevers: Dr. Currie's Reports on the Effects of Water: Dr. Ferriar's Med. Hist. and Reflections, vol. ii. and iii.: the Reports of the Houses

of Recovery of Dublin, London, &c.; and of the Society for bettering the Condition of the Poor. And in the collection of papers (2 vols.) published by Dr. Clarke of Newcastle, may be found the almost unanimous opinions upon the safety of such establishments, from a multitude of the most able and respectable physicians and surgeons in the island.

HOUSE-TAX. See WINDOW.

HOUSE-WATER, in *Mining*, is used where steam-engines are employed on mines, or collieries, for the water which is necessary for condensing, which often is obtained at very considerable expence, particularly in deep lead mines, in rocky districts, where the water that is pumped from the bottom of the mine can otherwise be discharged into a fough at a great distance below the surface; in such situations, the high-pressure engines of Trevethick, which want no condensing water, have been found very serviceable. At Yatestooop mine, near Wintler, in Derbyshire, they some years ago erected a large steam-engine under ground, on this fough, to avoid the lifting of house-water.

HOUSE-WIFE'S CLOTH, is a middle sort of linen cloth between fine and coarse, fit for family uses.

HOUSED-IN, in *Ship Building*. The seaman say of a ship, which, after the breadth of her bearing is brought in too narrow to her upper-works, that she is housed-in, or pinched too much.

HOUSED is also applied to the situation of the great guns of a ship, when they are secured at sea by their tackles and breechings.

HOUSE'E, in the *Manege*. See HOUSING.

HOUSELEEK, in *Botany*. See SEMPERVIVUM.

HOUSELEEK, *Lesser*. See SEDUM.

HOUSELEEK, *Small Annual*. See TILLÆA.

HOUSELEEK, *Water, of Egypt*. See PISTIA.

HOUSHOLD, the family or domestics of a prince, or private person.

The principal officers of the king's household are the lord steward, lord chamberlain, groom of the stole, master of the great wardrobe, and master of the horse.

The civil government of the king's house belongs chiefly to the lord steward of the household, who has an annual salary of 1460*l.* He has authority over all officers and servants of the king's house, except those of the chapel, chamber, and stable, who are under the jurisdiction of the lord chamberlain, master of the horse, and dean of the chapel, and he is the judge of all crimes committed within the court, or the verge. See COURT.

Under the lord steward are a treasurer of the household, whose place is 1200*l.* a-year; comptroller, with the same salary; paymaster, with 500*l.* a-year; master of the household, at 500*l.* a-year; clerks of the household, assistant clerks, clerks comptrollers, &c.; the officers and servants belonging to the almonry, the marshalsea, the verge, the kitchen, gardener, purveyors, &c.

The next principal officer of his majesty's household is the lord chamberlain, whose salary is 1200*l.* a-year; in whose department are the vice-chamberlain, with a salary of 1159*l.* 8*s.* 4*d.* a-year; secretary and clerks, superintendant of payments, groom of the stole, with an annual appointment of 2000*l.*; lords of the bed-chamber, grooms of the bed-chamber, gentlemen of the privy-chamber, master of the ceremonies with assistant and marshal, gentlemen ushers of the privy-chamber, gentlemen ushers who are daily waiters, to whom belongs black rod, assistant gentleman usher, grooms of the privy-chamber, gentlemen ushers who are quarterly waiters in ordinary, pages of the back stairs, pages of the bed-chamber, master of the robes with groom and clerks, wardrobe-keepers, serjeants at arms,

&c. the band of music, the medical department, house-keepers, tradesmen, artists, rangers and troopers of the forests, surveyors general of the king's woods, &c. chief justices in Eyre, officers of the royal chapels, chaplains in ordinary, ten priests in ordinary, sixteen gentlemen of the chapel-royal; preachers at the king's chapel, Whitehall, organists, &c. subordinate to the master of the horse, whose salary is 1266*l.* 13*s.* 4*d.* the clerk-martial and first equerry; the equeries, pages of honour, clerk of the stables, equerry of the crown stable, and yeomen riders. To the king's hunt belong the master of the stag-hounds, whose annual appointment is 2000*l.* a-year; the huntsman, six yeomen prickers, and grand falconer, whose yearly salary is 1200*l.* The military department of the king's household consists of the yeomen of the king's guards, the honourable band of gentlemen-pensioners, and the troops of the household, comprehending the horse and foot guards, &c.

HOUSHOLD DAYS, are four solemn festivals in the year, when the king, after divine service, offers a besant of gold to God on the altar. See BESANT.

The household days are Christmas, Easter, Whitsunday, and All Saints.

The household days are a part of the twelve collar and offering days.

HOUSING, in *Agriculture*, a term denoting the twirling or running together of hop-binds above the tops of the poles; by which means great injury is done to the crops.

It is likewise employed to signify the practice of putting of different sorts of live-stock into sheds or other covered buildings, in order to protect them during the severity of the winter season.

HOUSING, or *Houfée*, a cover laid over the saddle of a horse, in order to save it from the weather, dirt, &c.

The word is formed of the French *houffe*, which signifies the same thing; though it anciently denoted a kind of hood worn by country people.

The cavaliers appeared with their embroidered housings.

HOUSING, Boot, is a piece of stuff fastened to the binder part of the saddle that covers a horse's croup; either for the sake of ornament to hide the horse's leanness, or to save the clothes of the rider from being daubed and soiled by the sweat of the horse.

HOUSING, Shoe, is a piece of cloth bordered with a fringe, oftentimes put round the saddle to cover the croup, and hang down to the lower part of the belly, to save the stockings of those who ride without boots.

HOUSING, among *Bricklayers*, a term used for a brick which is warped, or is cast crooked or hollow in burning; in such a case, they say it is housing.

HOUSING, or *Houf-line*, in *Sea Language*, denotes a small line formed of three fine strands or twits of hemp, smaller than rope-yarn. It is chiefly used to seize blocks into their strops, to bind the corners of the sails, or to fasten the bottom of a sail to its bolt-rope, &c.

HOUSSA, in *Geography*, a country of Africa, lying N. and S. of the Niger, or Neel-Abeed, and placed in major Rennell's map of Africa S. of the Great Desert, or Sahara, and between Tombucoo on the W. and Tocur on the E., in N. lat. from about 15° to 17° 30', and E. long. from about 3° to 5°. The inhabitants, according to the account which Mr. Horneman received of them, are negroes, but not quite black; they are distinguished from their neighbours by an interesting countenance, and are represented as the most intelligent people in the interior of Africa; their stature is less disagreeable than that of the negroes, and they are much addicted to pleasure, dancing, and singing. Their disposition is beneyolent and mild. They are described as indolent

dustrious and skilful in the culture of the natural productions of their country, and in this respect they excel the Fezzaners, who obtain their clothes and household implements from them. Their music, compared with that of the Europeans, is imperfect, but the Houffian women possess musical powers sufficient to produce tears from their husbands, and to inflame their courage to the greatest fury against their enemies. The capital of this country is Houffa, situated, in Rennell's map, in N. lat. 16° 30'. E. long. 4° 30'. It lies at a small distance N. from Neel-Abeed. Mr. Park was informed by a) thereof, whom he met with at Benowm, and who had travelled through a number of kingdoms, that he had visited Houffa, and that it was the largest town he had ever seen. Mr. Park was also informed by others, that of the chief towns of Jenné, Tombuctoo, and Houffa, situated on or near the banks of the Niger, the last was the most considerable, and that the least of them was much larger than Sego. He was further told, that caravans frequently arrive both at Tombuctoo and Houffa, from the countries on the Mediterranean, travelling across the Desert by the way of Fezzan, with European goods and other merchandise.

HOUSTONIA, in *Botany*, named by Gronovius and Linnæus, after Dr. William Houlboun, F.R.S. who resided several years in the West Indies, and visited the Spanish main, from whence he sent various seeds to Miller and other botanists of that time, between the years 1728 and 1732, besides making several curious observations upon *Contrayerva*, *Jalap*, and other medicinal plants. He died in Jamaica in 1733. Some engravings, by his own hand, of the parts of fructification of various new genera of plants, in the manner of Plumier, came into Miller's hands, who sent an impression of them, in 1736, to Linnæus. Most of these plates were purchased, with Miller's herbarium and papers, by sir Joseph Banks, who printed and liberally distributed an edition of them, with the Latin descriptions and remarks of the author, under the title of *Reliquiæ Houstounianæ*, in quarto, in 1781. A few of the plates were re-engraved, after impressions of some that had been lost.—Linn. Gen. 51. Schreb. 68. Willd. Sp. Pl. v. 1. 583. Mart. Mill. Dict. v. 2. Ait. Hort. Kew. ed. 2. v. 1. 235. Juss. 197. Lamarck. Illustr. t. 79. Gært. t. 49.—Class and order, *Tetrandria Monogynia*. Nat. Ord. *Stelata*, Linn. *Rubiacea*, Juss.

Gen. Ch. *Cal.* Perianth half superior, of four small, upright, permanent teeth. *Cor.* of one petal, funnel-shaped; tube much longer than the calyx, cylindrical, slightly dilated at the top; limb in four deep, roundish or elliptical, spreading segments. *Stam.* Filaments four, in the neck of the tube, very small; anthers simple. *Pist.* Germen half inferior, roundish, two-lobed, compressed; style simple, shorter than the tube; stigma cloven, acute. *Peric.* Capsule in the bottom of the calyx, surrounded by its teeth, roundish, didymous, bursting at the top transversely, of two cells, and two valves which are contrary to the partition. *Seeds* few, small, ovate, attached to the partition.

Obf. Linnæus appears, as Gærtner remarks, to have mistaken the receptacle covered with seeds for one single seed, owing probably to the unripe state in which he saw it.

Ess. Ch. Corolla of one petal, funnel-shaped. Capsule of two cells, half superior. Seeds several, roundish.

1. *H. cærulea*. Linn. Sp. Pl. 152. Curt. Mag. t. 370. (*Lychnidis*, aut potius *Allines*, cognata *dispermos*; Pluk. Phyt. t. 97. f. 9.)—Radical leaves ovate. Stipulas abrupt. Stem repeatedly branched. Flower-stalks elongated, single-flowered.—Native of Virginia and other parts of North America. It was brought to Kew in 1785, from the west

coast of that country, by Mr. Menzies, to whom botany is so much indebted for various discoveries in that quarter, the South seas, and New Holland. The roots are fibrous and perennial. Stems numerous, erect, four or five inches high, and sometimes much more, repeatedly branched, square, smooth, slender, leafy, many-flowered. Leaves from half an inch to an inch long, entire, smooth, rough-edged, rather acute; the radical ones obovate or spatulate, stalked; stem-leaves opposite, much narrower, elliptic-lanceolate, sessile. Stipulas very short and broad. Flowers of a brilliant pale blue, or almost white, with a yellow eye, jasmine-like and very pretty, but scentless, produced all summer long. Each grows on a very long, simple, naked, lateral or terminal, smooth stalk. The two-lobed germen, and still more the capsule, rises above the entire part of the calyx; though its lower half be immersed in the base of the latter, all plants of this natural order having, strictly speaking, an inferior germen. Mr. Curtis says this species is quite hardy in England, best cultivated in a pot, with plenty of moisture, and easily increased by parting its roots. If paid the least attention to, it flowers perpetually, spring, summer, and autumn. We have no where seen it so fine as at Kew.

2. *H. longifolia*. Willd. n. 2. Gært. v. 1. 226.—Leaves lanceolate, tapering at each end. Stipulas ovate, pointed, often cloven. Flowers corymbose.—Native of North America. Gathered near Lancaster in Pennsylvania, by the Rev. Dr. Muhlenberg. This has more the habit of a *Galium*. It seems perennial. The stem is from three to five inches high, square, smooth, leafy, but little branched. Leaves linear-lanceolate, tapering at each end, about an inch long, smooth, somewhat revolute. Stipulas pale, ovate or triangular, acute; the lower ones undivided; the upper in two, three, or more segments. Flower-stalks axillary and terminal, forming a leafy corymbus. Teeth of the calyx very long; its base short. Limb of the corolla not much spreading.

This species was confounded by Linnæus and some of his correspondents with the following, from which it differs greatly in the narrowness of its leaves. Our Pennsylvanian specimen seems a fellow one to what Willdenow described.

3. *H. purpurea*. Linn. Sp. Pl. 152.—Leaves ovate, roughish; the lower ones heart-shaped. Stipulas ovate, pointed. Flowers corymbose.—Native of Virginia; said to have been introduced to the Kew garden, where it flowers most part of the summer, by Mr. Masson, in 1800. The plant is roughish in many parts. Stem much branched, forked. Leaves an inch or more in length, and half an inch broad, ovate or heart-shaped. Stipulas much as in *H. longifolia*. Inflorescence also similar, but the stalks are rough, more numerous and more divided. Calyx and corolla shaped as in the last.

That beautiful plant the *Bouvardia triphylla* of Salis. Parad. t. 88; Hort. Kew. ed. 2. v. 1. 245; which is *Houstonia coccinea* of Andr. Repos. t. 106, and has been referred to *Ixora* by Jacquin and Cavanilles, was long mistaken by our cultivators for *Houstonia purpurea*, and was once contended for some to be an *Hamelia*. We may now hope it will rest in peace; yet the ignorant, who have learned to call it by a wrong name, will perhaps not easily adopt a new one. So important is it for those who direct the public information, to be circumspect before they decide, and never to alter but with sufficient reasons.

HOUT or WOOD bay, in *Geography*, a bay on the S. coast of Africa, N.N.W. from the Cape of Good Hope. S. lat. 34° 5'. E. long. 18° 19'. This bay is contiguous to Chapman's bay; the latter communicating, by a defile of the mountains, about 2700 yards in length, with Vis or Fish

bay close to Simon's bay; and the former, by another defile, with the great road leading from Cape Town to Simon's bay. Hout bay affords safe and convenient anchorage for eight or ten ships; and has a rivulet of fresh water falling into it from the back part of Table mountain; but the getting out of the bay is supposed to be very difficult and precarious, on account of the eddy winds from the surrounding mountains when they are moderate in the offing, or from the south-easterly winds setting into the entrance, as well as from the constant westerly swell and wind prevailing from that quarter in the winter season. Hout bay is now defended with a battery and a block-house.

HOU-TCHEOU, a city of China, of the first rank, in the province of Tche-kiang, situated on a lake from which it takes its name. The quantity of silk manufactured here is almost incredible; and it is also the chief place in China for making writing pencils. Its district contains seven cities, one of which is of the second, and six of the third class. N. lat. $30^{\circ} 52'$. E. long. $119^{\circ} 32'$.

HOUTEVILLE, CLAUDE FRANCIS, in *Biography*, was born at Paris in 1688. He became a member and secretary of the French academy, and secretary to cardinal Dubois, whose friendship obtained for him the abbey of St. Vincent du Bourg-sur-mer, in the diocese of Bourdeaux. This was in the year 1723, and in the same year he was admitted a member of the French academy. He died in 1742, aged 54. His principal work is entitled "The Truth of the Christian Religion proved by Facts," three vols. 4to.

HOUTTUYNIA, in *Botany*, received its name in compliment to Dr. Houttuyn, of Amsterdam, a collector and merchant of natural curiosities, one of the people who subscribed towards the expence of sending Thunberg to Japan, by which he enriched both his collection and his purse, in the true spirit of a Dutch virtuoso and patron. Thunb. Jap. 12. Act. Holm. ann. 1783. 149. t. 5. Murray in Linn. Syst. Veg. ed. 14. 519. Schreb. 614. Willd. Sp. Pl. v. 2. 290. Mart. Mill. Dict. v. 2. Juss. 25. Lamarck. Illustr. t. 739.—Class and order, *Heptandria Trigynia*. Nat. Ord. *Piperitæ*, Linn. *Aroides*, Juss.

Gen. Ch. *Cal.* Spatha of four ovate, concave, obtuse, coloured, spreading leaves; spadix about as long as the spathe, oblong, covered with flowers; perianth none. *Cor.* none. *Stam.* Filaments generally seven, short, equal; anthers vertical, ovate, two-lobed. *Pist.* Germen roundish, somewhat triangular; styles three, awl-shaped, short; stigmas recurved, acute, downy on the upper side.—*Fruit* unknown.

Ess. Ch. Spatha of four leaves. Spadix covered with flowers. Corolla none.

1. *H. cordata*. Thunb. Jap. 234. t. 26. *Doku Dami*, or *Sjunjak*, of the Japanese. Found by Thunberg, very abundantly, in ditches by the way sides, and about towns, between Miaco and Jedo in Japan, flowering in May and June. The root is fibrous and annual. Stem herbaceous, erect, from a span to a foot high, simple, or slightly branched, rather zigzag, furrowed, leafy, scarcely downy; its lower joints throwing out numerous whorled fibres. Leaves alternate, stalked, heart-shaped, broad, pointed, entire, veiny, smooth, finely dotted; paler beneath. *Sinipulas* broad, sheathing, united to the footstalks and clasping the stem. Flowers few, stalked, solitary, opposite to some of the upper leaf-stalks. Leaves of the involucre white, rather above half an inch long. Flowers purplish, with yellow anthers.

One of professor Thunberg's own specimens, (indeed no other botanist, as far as we know, has gathered the plant,)

shews very plainly the three recurved stigmas, with the styles, in each flower, and has enabled us to correct the character and classification of the genus. The *Houttuynia* seems to occupy in Japan the place of our *Sagittaria*, to which its flowers bear a not very remote resemblance, however different in botanical characters. The leaves look somewhat like those of *Aristolochia Clematidis*.

HOW, in *Agriculture*, a term which frequently denotes a small round hillock, or small hill of the artificial kind.

How, in *Geography*, a town of Poland, in the palatinate of Lenciez; 32 miles N.E. of Lenciez.

HOWAN SOUND, a strait of the sea, between the islands of Egilsha and Rowfa, two of the Orkney islands.

HOWARD, THOMAS, in *Biography*, earl of Surrey, and duke of Norfolk, an eminent commander in the reign of Henry VIII., was born in 1473. He was brought up to arms, and soon after the accession of Henry was decorated with the knighthood of the garter. He served with his brother sir Edward, against sir Andrew Barton, a Scotch free-booter, or pirate, who perished in the action. When his brother, sir Edward, was killed in an action near Brest, in 1513, he was appointed to the office in his stead, and in the capacity of high admiral he effectually cleared the channel of French cruizers. The victory of Flodden-field, in which the king of Scotland was slain, was chiefly owing to his valour and good conduct. For this his father was restored to the title of duke of Norfolk, and the title of earl of Surrey was conferred on him. In 1521 he was sent to Ireland as lord-lieutenant, chiefly for this purpose, it was thought, of having him out of the way during the proceedings against his father-in-law, the duke of Buckingham. Here he was very instrumental in suppressing the rebellion, and having served there two years, he returned, and had the command of the fleet against France. By the death of his father, he succeeded to the title and estates as duke of Norfolk. Notwithstanding his great services, Henry, at the close of his tyrannical life and reign, caused the duke to be sent to the Tower on a charge of high treason, and his son to be beheaded in his presence. The death of the king saved the duke's life. (See HENRY VIII.) He was, however, detained prisoner during the whole of the reign of Edward VI., but one of the first acts of Mary, after her accession to the throne, was to liberate this faithful servant of her late father. He was, after this, the principal instrument in suppressing the rebellion excited by sir Thomas Wyatt. He died in August 1554, having passed his eightieth year. Hume's Hist.

HOWARD, HENRY, earl of Surrey, son of the preceding, a nobleman of considerable accomplishments, and one of the early English poets, was born about the year 1520. In his youth, he resided at Windsor as companion to the young duke of Richmond, natural son to Henry VIII., whom he afterwards accompanied to Wolfey's new college at Oxford. He then made the tour of Europe, under the impression of a romantic passion for the daughter of the earl of Kildare, whom he characterizes with the epithet of "Fair Geraldine." In the spirit of chivalry, he published at Florence a general challenge at tilting to all persons who should dispute the supremacy of her beauty. He came off victorious, and as a reward, was presented with a shield by the grand duke of Tuscany. On his return to England, about 1541, he was decorated with the order of the garter. In 1542 he acted as lieutenant-general in the army with which his father invaded Scotland. He accompanied the king in his expedition to France in 1544, and was field-marshal of the army before Boulogne. After serving his country with great valour, he fell

fell a victim to the jealousy of Henry VIII., who pretended to suspect him of a design to marry his daughter Mary. He and his father, as we have already seen, were sent to the Tower, and the son was beheaded on Tower-hill, in the year 1547, leaving behind him two sons and three daughters. His sonnets are printed in Anderson's collection of British Poets. His eldest son, Thomas, was the duke of Norfolk, who was so conspicuous in the reign of Elizabeth for his negotiations with Mary, queen of Scots, terminating in his ruin. The earl of Surrey translated the second and fourth books of Virgil's *Æneid*, which were published in 1557. According to Warton, "Surrey, for justness of thought, correctness of style, and purity of expression, may justly be pronounced the first English classical poet."

HOWARD, CHARLES, lord Effingham, and earl of Nottingham, a distinguished naval commander, was born in 1536; he was son of lord William of Effingham, and grandson to Thomas, second duke of Norfolk. In his youth he served in several expeditions under his father, then lord-admiral, and, in 1559, he was sent as ambassador to France, and after his return he was elected knight of the shire for Surrey. In 1568 he was appointed general of the horse. The same year he displayed great valour in the north, against the rebels commanded by the earls of Northumberland and Westmoreland. The following year he had the command of a squadron, with which he escorted, from Zealand to Spain, Anne of Austria, daughter of the emperor Maximilian, who was betrothed to Philip of Spain. In 1572 he succeeded his father as lord Effingham, and not long after was made knight of the garter. He had, as we have seen in some preceding articles, the important command of the English fleet when the Spanish Armada entered the channel, and by his great skill and prudence contributed principally to its destruction. For this important service he was created earl of Nottingham, and enjoyed the queen's confidence to her death. (See ELIZABETH.) In the rebellion excited by the earl of Essex, lord Nottingham commanded the force which invested Essex-house, and brought him to submission. At the coronation of king James, the earl officiated as lord high-steward, and he was soon after appointed ambassador to the court of Spain. His last service in the capacity of admiral, was the conveying to Flushing of the princess Elizabeth, married in 1613 to the elector palatine. After his return, he lost the king's favour, and resigned the post to the duke of Buckingham. He died in 1614. *Biog. Brit.* - Hume.

HOWARD, sir ROBERT, an English writer, was the son of Thomas, earl of Berkshire, and educated at Magdalen college, Oxford. He suffered considerable losses during the civil wars, but at the Restoration he was knighted, and made auditor of the exchequer. He was a zealous friend of the Revolution, and died about the year 1700. As an author, he wrote several plays: the *History of the Reigns of Edward and Richard II.*; the *History of Religion*, 1694.

HOWARD, JOHN, born at Hackney, or Enfield, in 1727, was son of a carpet-warehouseman, and upholsterer in London. The father died during the infancy of his son, who was left in the hands of guardians, by whom he was apprenticed to a grocer. He did not serve his time out, but bought his indentures, and indulged his curiosity in a tour to France and Italy. Upon his return, he fell into a weakly state of health, which, with his attachment to reading and the study of nature, induced him to withdraw into privacy in the country. From a motive of gratitude, he married the person with whom he lodged, and who had carefully attended him, though she was sickly, and twice his age, and even remonstrated against the inequality of such an union. He passed three years with her in conjugal harmony; and upon her death, in 1756, set out

upon another tour to the continent. In this, his leading object was to view the ruins of Lisbon, lately desolated by an earthquake. He was defeated in his plan by the capture of the vessel in which he sailed, and by being carried a prisoner into France. The sufferings which he underwent, and to which he was witness in others, made a deep impression on his mind; this was probably the principal cause of the philanthropical exertions which afterwards employed so large a portion of his life. Upon his liberation, he laid the state of his fellow-sufferers before the commissioners of the sick and wounded, who received his information with gratitude. In 1758 he married the eldest daughter of Mr. Serjeant Leeds, of Croxton, Cambridgeshire. His principal residence for some years was at Cardington, near Bedford, where he put in practice those schemes for the good of his poor neighbours and tenants, in which he ever took delight. He built upon his estate a number of very neat and comfortable cottages, to each of which he annexed a little ground for a garden. These he peopled with sober and industrious tenants, over whose welfare he watched with the vigilance of a parent. In 1765 his domestic happiness was irreparably injured by the death of his wife, soon after she had borne him her only child. The care of his son and his usual benevolent occupations continued to employ him till the year 1773, when he was selected to serve the office of high-sheriff for the county of Bedford. In the course of his official duties he found that a multitude of abuses prevailed, which he knew not how to remedy; he determined, however, to obtain every possible information on the subject. He began by visiting most of the county gaols in England; and on a second journey he extended his researches into town-prisons and houses of correction, and so diligently did he pursue his object, that he was enabled, in the month of March 1774, to lay before the house of commons a large mass of information, for which he received the public thanks, and on the credit of his testimony, two bills were passed during the same session of parliament, one, "For the Relief of acquitted Prisoners in Matters of Fees;" the other, "For preserving the Health of Prisoners." The heads of these bills, with the several regulations contained in them, Mr. Howard procured to be printed, and sent to every keeper of a gaol throughout England. He now felt the high importance of the business in which he had engaged, and resolved to devote himself and his fortune to the improvement of this part of civil polity. With this view he made two tours on the continent, travelled into Scotland and Ireland, and the fruit of his researches was given to the public in 1777, under the title of "The State of the Prisons in England and Wales, with Preliminary Observations, and an Account of some Foreign Prisons." As soon as this work appeared, the world was astonished at the mass of valuable materials accumulated by a private, unaided individual, through a course of prodigious labour, and at the constant hazard of his life, in consequence of the infectious diseases prevalent in the scenes of his enquiries. He was, from this moment, looked on as one of the extraordinary characters of the age, raised up by providence for the purpose of meliorating the condition of that wretched part of the community for whom he interested himself. He was anxious to correct their vices, which he thought would be best effected by gentle but strict discipline, accompanied with all the comforts of which their wretched situation was susceptible. His zeal was seconded by the exertions of parliament, and a bill was brought in for the establishment of houses of correction, according to his ideas. He now made another tour on the continent, and took a still more accurate view of all the prisons in every part of England, Wales, Scotland, and Ireland, including in his observations whatever related

related to hospitals. He every where noted down the structure and regulations of these several kinds of buildings, and procured plans and draughts where he thought they might suggest something useful for imitation. These researches furnished him with materials for an appendix to his former work, which was printed in the year 1780. About this period he accepted the office of one of the three supervisors appointed for establishing penitentiary houses. He made it a condition of his acceptance that Dr. Fothergill should be one of his associates; but the death of the doctor, and some difference of opinion concerning the situation of the first of these buildings, caused him, in 1781, to resign his office, but it was only to resume his far greater exertions in the same noble cause. He travelled through the whole of the northern kingdoms of Europe, and revisited the prisons of his own country; he seemed resolved to take no repose while any thing remained in which he thought his farther labours might serve the interests of humanity. The progress of contagion, in prisons and hospitals, had led him to consider all the means used for checking it, and he expected to find these practised in their fullest extent in the prevention of the plague; he therefore resolved to examine all the lazarettos in Europe. Personal risk never, in his estimation, stood in the way of duty: he did not hesitate to expose himself to all the dangers which attended so near an approach to the most alarming pestilence. He sat out in 1785, unaccompanied by a servant, not thinking it justifiable to expose any human being to the dangers which, for the public good, he was willing to undergo. He took his way by the south of France, through Italy, to Malta, Zante, Smyrna, and Constantinople. From the last named city he returned to Smyrna, where he knew the plague then prevailed, for the express purpose of going to Venice with a "Foul Bill," as it is called, that he might be subjected to all the rigour of a quarantine in a lazaretto, in order that he might practically know its rules. Such an enterprising and heroic conduct in the great cause of humanity excited the attention of almost every thinking individual of Europe. On his return by Vienna, the emperor Joseph expressed a desire of seeing him: the interview passed as between an enlightened sovereign desirous of information, and a plain independent gentleman, above the awe of rank or the vanity of being noticed. During his absence on this journey, a subscription was entered into for the purpose of erecting a statue, and it was soon filled with names of the first distinction. As soon as he heard of the scheme, he expressed such a decided aversion from what he denominated being "dragged out in public," that it was reluctantly abandoned. On his return he revisited once more the prisons, bridewells, hospitals, and prison-hulks of his own country, which occupied his attention during the course of two years. The year 1789 was chiefly devoted by him to the methodizing and printing the important matter which he had collected since his last publication. This appeared in a quarto volume, entitled "An Account of the principal Lazarettos in Europe, with various Papers relative to the Plague, &c." At the close of this publication he declared his intention of again quitting his native country, for the purpose of revisiting Russia and Turkey, and extending his travels in the East. He quitted England in the summer of 1789, and proceeded through Germany, to Peterburg and Moscow; at all places the prisons and hospitals were thrown open to him, as if the governments of the earth were ready to second his humane and benevolent designs, and hailed his presence as that of a general censor of that part of the police, whose authority was recognized in every civilized country. He next proceeded to the new Russian settlements on the Black sea, and took his station at the town of Cherfon.

At this place a fever of a most malignant kind prevailed; among the victims of which was a young lady whom he had been requested to visit, being supposed to possess medical skill of a superior kind in those cases. From her he probably received the contagion which carried him off on the 20th of January 1790, about the age of sixty-three. He was buried in the neighbourhood of Cherfon, and all honours were paid to his memory by prince Potemkin and other men in office. For a more full and very interesting account of this gentleman, who has been frequently characterized, and justly so, as "The noblest of all the Howards;" the reader is referred to Dr. Aikin's "View of the Character and public Services of the late John Howard, esq. LL. D. F. R. S." 1792. Dr. Aikin expresses himself in the following terms in the General Biography: "The bare recital of what Mr. Howard did in the cause of humanity, is sufficient to place him among the greatest benefactors of mankind, as well as the most extraordinary private characters recorded in biography. He was, indeed, singularly calculated for the task which he undertook. Accustomed to the most rigorous temperance, so as to discard from his diet animal food and fermented liquors, he found no difficulty in living in the poorest countries. In all other respects his mind was equally master of his body, and he incurred hardships of every kind without repugnance. In temper he was calm and reposeful, but firm and resolute; proof against every allurement or intimidation that might divert him from his purpose. Economical in private expences, he knew no bounds in his expenditure on objects of public utility, and regarded money only as an instrument of beneficence. In honour, integrity, and attachment to principles, he was not surpassed by any human being. His talents were rather of the useful than the shining kind, but peculiarly adapted for that collection of facts and observations in which he employed himself. The testimony of public respect which he refused when living, has been conferred upon his memory, and his monumental statue was one of the first of those by which the cathedral of St. Paul's has been made a receptacle of national worthies."

We cannot close this article without subjoining the eloquent eulogium pronounced upon Mr. Howard, by Mr. Burke in his "Speech at Bristol, previous to the election in 1780." Having occasion to mention him, he adds, "I cannot name this gentleman without remarking, that his labours and writings have done much to open the eyes and hearts of mankind. He has visited all Europe,—not to survey the sumptuousness of palaces, or the stateliness of temples; not to make accurate measurements of the remains of ancient grandeur, nor to form a scale of the curiosity of modern art; not to collect medals, or collate manuscripts;—but to dive into the depths of dungeons; to plunge into the infection of hospitals; to survey the mansions of sorrow and pain; to take the gage and dimensions of misery, depression, and contempt; to remember the forgotten, to attend to the neglected, to visit the forsaken, and to compare and collate the distresses of all men in all countries. His plan is original; and it is as full of genius as it is of humanity. It was a voyage of discovery; a circumnavigation of charity. Already the benefit of his labour is felt more or less in every country; I hope he will anticipate his final reward, by seeing all its effects fully realized in his own. He will receive not by retail, but in gross, the reward of those who visit the prisoner; and he has so forestalled and monopolized this branch of charity, that there will be, I trust, little room to merit by such acts of benevolence hereafter."

HOWARD, SAMUEL, brought up in the king's chapel,
took

took his degree of doctor of music at Cambridge at the time of the installation of the duke of Grafton as chancellor of that university. Dr. Howard had studied much under Dr. Pepusch at the Charter-house, and was well acquainted with the mechanical rules of counterpoint. His overture in the "Amorous Goddess," a happy imitation of Handel's overture in "Alcina," particularly the musette and minuet, was long very popular in the theatres and public gardens. But his ballads, which were long the delight of natural and inexperienced lovers of music, had the merit of facility; for this honest Englishman preferred the style of his own country to that of any other so much, that he never staggered in his belief of its being the best in the world, by listening to foreign artists or their productions, for whom and for which he had an invincible aversion.

He began to flourish about the year 1740, and from that time till Arne's Vauxhall songs were published under the title of "Lyric Harmony," they were the most natural and pleasing which our country could boast.

After the decease of Michael Christian Festing, Dr. Howard took the lead in managing the affairs of the musical fund; but not with equal address and intelligence.

He was a dull, vulgar, and unpleasant man; and by overrating his own importance, and reigning paramount over his equals, he rendered the monthly meetings disagreeable, and cooled the zeal of many well-wishers to the society.

He long laboured under a dropsy, yet walked about with legs of an enormous size, during several years. But it was not this disorder which put an end to his existence, at last, but repeated paralytic strokes. He died about the year 1783.

HOWARD'S Point, in *Geography*, a cape on the N. W. coast of the island of Egmont, or New Guernsey. S. lat. $10^{\circ} 42'$. E. long. $164^{\circ} 18'$.

HOWARD, a township of America, in the county of Suffolk, Upper Canada, W. of Oxford; watered on the N. by the Thames and on the S. by lake Erie.

HOWASSE, a town of Hindoostan, in Malwa; 10 miles N.E. of Tandla.

HOWDEN, anciently called *Hoveden*, a market town in the division of Howdenshire, in the East Riding of the county of York, England, is 20 miles S.E. of the city of York, 25 W. of Hull, and 184 N. of London. In the year 1801 the town contained 325 houses and 1552 inhabitants. In the reign of Edward the Confessor this town, with the church and lands around it, belonged to the monastery of Peterborough. William the Conqueror, however, seized them, and gave the whole to the bishop of Durham: in consequence of which the bishop built a palace here. And some of them made it their principal residence. The following prelates died here: Hugh Pudsey in 1195; Walter de Kirkham in 1260; and Walter de Skirlaw in 1405. Leland describes the bishop's palace as built partly of timber and partly of brick and stone. What remains is now converted into a farm house, near which are the ruins of several large buildings, and a long range of granaries. King Henry III. granted the bishops the following privileges attached to this manor: the goods of all persons who committed *felony-de-se*; of wrecks cast on the shores of the Ouse; of tollage and lackage; of having a clerk of the market; and a coroner, &c. This town has been much improved lately, in the erection of new buildings, paving the streets, and in other respects. In the market place is a large edifice called the Moot-hall; in which is the council house, a place for keeping courts. The bishops of Durham are required by ancient custom to maintain a bull-ring in the market place, and to provide ropes for securing the bulls when baited. In the

year 1791 a large work-house was built here by subscription. The Domesday survey notices a church at the place; but the present building is of different eras. The tower was built by bishop Skirlaw about the year 1390, and the same prelate also erected a chapter-house on the south side of the choir. This church is collegiate, and is built in a cruciform shape, with a nave, transepts at the eastern end, or chancel, and tower in the centre. It displays some interesting specimens of ancient ecclesiastical architecture. It is much to be regretted that the inhabitants have suffered the elegant chapter-house to fall in ruins: and the chancel part is also in a shameful dilapidated state. Here are a weekly market on Saturdays, and five annual fairs, one of which, commencing on the 25th of September, ending on the 3d of October, is considered the greatest mart for horses in England. In the parish are two chapels of ease, one at Barmley, and the other at Laxton. A chapel for Methodists, and another for Independents, are established here. This place gave birth to Roger of Hoveden, who was monk of the abbey. Savage's History of Howden Church, 12mo. 1799, and Hutchinson's History, &c. of Durham.

HOWE, JOHN, in *Biography*, a learned English non-conformist divine, was born at Loughborough, in Leicestershire, in the year 1630. His father, who was minister of the place, being ejected by archbishop Laud, on account of connecting himself with the Puritans, removed with his son to Ireland, where they continued, till the rebellion in that country obliged them to return to England, when they settled in Lancashire. The son received a good classical education, and was sent at an early age to Christ's college, Cambridge. He continued at Cambridge till he took his degree of B. A., and then removed to Oxford, where he was appointed bible-clerk of Brazen-Nose college in 1643. In this situation he so distinguished himself in learning and piety, that he was elected fellow of Magdalen college. In 1652 or 3, he became a preacher, and was ordained at the church of Winwick, Lancashire, after which he was chosen minister of Great Torrington in Devonshire, where he discharged the functions of his office in the most exemplary manner. Having occasion to take a journey to London, he went as a hearer to the chapel at Whitehall. Cromwell was present, and struck with his demeanor and person, sent a messenger to inform him that he wished to speak with him when the service was over. In the course of the interview he desired him to preach before him the following Sunday: he requested to be excused: the protector would not be denied, and even undertook to write to his congregation a sufficient apology for his absence from them longer than he intended. This led to the appointment of Mr. Howe to the office of his domestic chaplain, and he accordingly removed with his family to Whitehall. He was soon appointed lecturer of St. Margaret's church, Westminster, where he was much admired and followed as a preacher. In this situation of importance and influence Mr. Howe embraced every occasion that offered of promoting the interests of religion and learning, and was always ready to do kind offices to men of merit among the royalists. He was so zealous in behalf of the interests of others, that Cromwell once asked him if he never meant to think of himself; "I wonder," says he, "when the time is to come, that you will move for any thing for yourself, or your family." To some of the peculiar notions of Cromwell Mr. Howe could not assent, and in one particular instance he thought it right to preach against them in his presence, because he believed they might lead to practical ill consequences. The friends of the preacher were alarmed for him, and one of them predicted, that he would find it difficult,

difficult, if not impossible, to regain his favour. "I have," said the worthy man, "discharged my conscience, and the event must be left to God." From this period the friendship of Cromwell was less ardent, and his manners cool and reserved, but he never mentioned the subject to him. Upon the death of Oliver, he was continued by his son Richard in the same situation, as domestic chaplain at Whitehall, and upon the deposition of Richard, he returned to his people at Torrington. In 1662, he was ejected from his living under the act of Uniformity; but after he had been silenced by the law, he continued to preach occasionally in the private houses of his friends and acquaintance, till a process was taken out against him. He was summoned before the bishop of Exeter, who did what he could, as a friend, to persuade him to conform, but when he found that his admonitions were in vain, the prelate dismissed him with strong assurances of his continued regard. In 1671, Mr. Howe removed to Ireland, to become chaplain to lord Maffarene, who lived at Antrim, by whom he was received and treated with great respect and attention. On account of his learning, and true Christian temper, he acquired the particular friendship of the bishop of Antrim, who, together with his metropolitan, gave him leave to preach in the parish church every Sunday in the afternoon, without submitting to the terms of conformity. In the year 1685, the Dissenters being cruelly persecuted in every corner of the kingdom, Mr. Howe accepted of an invitation from lord Wharton to accompany him on his travels into foreign countries. During these travels he had the satisfaction of seeing most parts of Europe, and of conversing freely, not only with a number of learned Papists, but several eminent Protestant divines, both Lutherans and Calvinists. In 1686, he settled at Utrecht, where he took his turn in preaching at the English church in the city, and assisted the English students in the university, by his instruction and advice in the prosecution of their studies. Here he became acquainted with several eminent persons of his own country, and among others with Dr. Burnet, afterwards bishop of Salisbury, with whom he was accustomed to speak freely upon a variety of topics. In a conversation they once had respecting non-conformity, Dr. Burnet told him that it would not last long; but that when Mr. Baxter, Dr. Bates, and himself (Mr. Howe) were laid in their graves, it would sink and come to nothing. Mr. Howe said it could not be so, because it did not depend on persons but principles, which, when adopted on grounds approved of after serious and sincere enquiry, would not be laid aside by men of conscience. While he continued in Holland, Mr. Howe was admitted to frequent audiences by the prince of Orange, afterwards king William III. of England, who always maintained a sincere respect for him. Mr. Howe returned home in 1687 upon king James's declaration for liberty of conscience, but scarcely was he quietly settled when he was called on by his brethren to consider what was to be done in that crisis, and he without hesitation gave his opinion against the king's dispensing power. After the Revolution he discharged the duties of his pastoral office with unwearied diligence, labouring most zealously to promote the interests of real practical religion, and to diffuse a spirit of candour, charity, and mutual forbearance, among his dissenting brethren. He died in 1705, when he had nearly completed his seventy-fifth year. Mr. Howe was a person of distinguished piety and virtue, of eminent intellectual endowments, and of extensive learning. According to Granger, "He was one of the most learned and polite writers among the Dissenters. His reading in divinity was very extensive: he was a good Orientalist, and understood several of the modern languages."

His works are numerous and truly excellent; the whole have been collected and printed in two volumes folio, 1724, with a life of the author prefixed, to which the reader is referred for more particulars than can be given in this article. Perhaps the principal of his pieces are "The Blessedness of the Righteous laid open," and "The Living Temple: or a designed Improvement of that Notion that a good Man is the Temple of God." Biog. Brit. Neal's History of the Puritans.

HOWE, RICHARD, *Earl*, born in 1725, was the second son of lord viscount Howe. He was educated at Eton, which he left when he was only fourteen years of age, to enter the service of his country on board the *Severn*, commanded by the honourable captain Legge, which made a part of commodore Anson's squadron destined for the fourth seas. At twenty years of age he was appointed to the command of a sloop of war; in this he beat off two large French frigates after a gallant action, for which he was made post-captain. He was now appointed to a frigate, and afterwards made captain of admiral Knowles's own ship of eighty guns in Jamaica, with which, at the peace in 1748, he returned to England. On the renewal of the war he was appointed to the *Dunkirk* of sixty guns, making part of admiral Boscawen's squadron, and he captured, off Newfoundland, the *Alcide* French man-of-war of sixty-four guns. In 1757, he served under admiral Hawke, and in the following year was appointed commodore of a squadron, with which he destroyed a number of ships and magazines at St. Malo. Prince Edward, afterwards duke of York, served on board his ship, and on the sixth of August, of the same year, he took Cherbourg, and destroyed the *bason*. About this time, by the death of his brother, he became lord Howe, and shortly after had a considerable share in the victory over the French fleet commanded by Conflans. When admiral Hawke presented him to the king, his majesty said, "your life, my lord, has been one continued series of services to your country." On the return of peace he was appointed a lord of the admiralty, and afterwards treasurer of the navy. In 1770 he was promoted to the rank of rear-admiral of the blue and commander-in-chief in the Mediterranean. In 1775 he rose in succession to vice-admiral of the blue: at this time, lord Hawke gave the following seaman-like testimony to his merit in the house of lords, "I advised his majesty," said he, "to make the promotion, I have tried my lord Howe on important occasions: he never asked me how he was to execute any service, but always went and performed it." In the contest with America, it was the policy of ministers to employ, in high commands, officers whose public principles had led them to be favourers of popular rights, and the opposers of coercive measures. Among these none stood higher than lord Howe, and his brother the general. These, by embarking in the cause, were probably actuated with the persuasion that they could settle the differences without having recourse to the sword. Lord Howe went out with limited instructions, and every attempt at pacific measures proved to be in vain. He was now obliged, by his naval character, to follow such a plan as would do honour to his profession. When the French joined the American cause, lord Howe had an opportunity of exhibiting his great talents as a commander; in 1778, through the inattention of the administration, he was left with a force very inferior to that of the enemy, and the English fleet was brought into a situation of much danger, but by the skilful exertion of his lordship, the French thought it prudent to sail away, without putting their strength to a trial. The enemy's fleet now invetted Rhode Island, but by the manoeuvres of lord Howe its plans were again defeated. Disgusted, probably, with the cause in which he never cordially

dially embarked, and detesting the principles of an administration who were desirous of destroying the rights of their countrymen across the Atlantic, lord Howe resigned in 1778, and remained unemployed till 1782, when, upon the change of administration, he was advanced to the rank of admiral of the blue, created a viscount of Great Britain, and appointed to the command of a fleet fitted out for the relief of Gibraltar, which he performed in the teeth of the combined fleets of France and Spain, who shunned an action, though far superior in force and numbers. At the conclusion of the war he was made first lord of the admiralty, an office which he held with a short intermission by a change of administration, till 1788, when he was created an English earl. In 1793, when the war with France broke out, his lordship, at the king's particular desire, accepted the command of the channel fleet, and on the glorious 1st of June, as it is now called, he obtained a most decisive victory over the French Fleet, took seven men of war, and rendered the others incapable of farther opposition. On the part of the British not a ship was destroyed, or taken, or even much injured, and this vast success was obtained with the loss of but few men, though the slaughter among the enemy's crews was very great. The gratitude and enthusiasm of the nation was proportioned to the importance of the service, and the 1st of June is consigned, by the epithet already noticed, to futurity, among the most splendid days of our national calendar. In 1795 lord Howe was appointed general of the marines, and in 1797 he resigned his naval command, and was decorated with the order of the garter. His lordship died in 1799, at the age of seventy-three, having served his country with the highest reputation for a long period of almost threecore years. Lord Howe was ever distinguished by cool and steady valour, sound judgment, and consummate seamanship. Month. Mag. Gent. Mag.

HOWE, *The*, in *Geography*, a small island in the English channel, near the N.W. coast of the island of Guernsey.

HOWE'S *Foreland*, the northern point of a peninsula on the N.E. coast of Kerguelen's land. S. lat. 48° 48'. E. long. 69° 28'.

HOWE'S *Island*, an island in the South Pacific ocean. S. lat. 31° 36'. W. long. 159° 4'.

HOWE'S *Island*, an island in the South Pacific ocean, discovered by Captain Wallis in 1767, on which a few cocoon trees were growing. It is about ten miles long and four broad. S. lat. 16° 46'. W. long. 154° 8'. Captain Cook observed it in his passage from Ulitea to the Friendly isles, in 1774, and found it to be a low reef-island of a circular form, about four leagues in compass, composed of several small patches connected by breakers, the largest lying on the N.E. part. It appeared to have no inhabitants.

HOWE'S, or *Lord Howe's Island*, one of the cluster, called Queen Charlotte's islands, separated from Egmont island by a passage extending about 11 leagues, and about four miles broad. Lord Howe's island lies in S. lat. 11° 10'. E. long. 164° 43'; and Cape Byron, the N. E. point of Egmont island, in S. lat. 10° 40'. E. long. 164° 49'. Both these islands appear to be fertile, and have a pleasant appearance, being covered with tall trees of a beautiful verdure. The inhabitants of Egmont island are extremely nimble, vigorous, and active, and seem to be almost as well qualified to live in the water as upon the land, as they were in and out of their canoes almost every minute.

HOWE'S *Sound*, a bay or inlet in the gulf of Georgia. The entrance is in N. lat. 49° 23'. E. long. 237°.

HOWELL, JAMES, in *Biography*, born in Carmarthen-shire about 1596, was educated at Jesus college, Oxford,

and at the close of his studies he came to London to seek employment, being unable, through straightened circumstances, to remain at the university the usual period. Through the interest of sir Robert Mansel he was appointed steward to a patent glass manufactory, it being requisite to send an agent abroad to procure the best materials and workmen. He left England in 1619, and visited many commercial towns in Holland, Flanders, France, Spain, and Italy. In this journey he laid in a large stock of knowledge of men and things, and obtained an acquaintance with modern languages very unusual at that period. His love of literature did not prevent him from performing his duty to his employers. He negotiated a supply of the best barilla, at a cheap rate, from Alicaut, and engaged some able workmen at Venice and other places. He returned to London in the winter 1621; in the following year he went to Spain, and during his absence was chosen fellow of Jesus college. In 1624 he had acquired such reputation that he was made secretary to lord Scrope, president of the North, and in 1627 was chosen member of parliament for Richmond, Yorkshire. In 1630 he accompanied Robert, earl of Leicester, who was appointed ambassador extraordinary to the court of Denmark, in quality of his secretary, and displayed his oratorical talents in Latin speeches before the king of Denmark and some German princes. He was afterwards employed in state affairs; and in 1640 became clerk of the council; but in 1643 his papers were seized by order of parliament, and he was committed to the Fleet, where he supported himself by his pen. His writings were numerous, but chiefly of a temporary kind. He is chiefly known as an author by *A Collection of Letters*, in one volume, octavo, containing much of the history of the times. In the reign of Charles I. he was esteemed a royalist, but his remarks upon the fatal catastrophe which terminated that inglorious reign shew that he felt nothing for the fate of the monarch. He flattered Cromwell, and by his bending temper he was made historiographer to Charles II. He died in 1666, and the following inscription is to be seen on his tomb in the Temple church: "Jacobus Howell, Cambro-Britannus, Regius Historiographus (in Anglia primus); qui post varias peregrinationes tandem naturæ cursum peregit, fatur annorum et famæ, domi forisque: huc usque erraticus, his fixus. Biog. Brit.

HOWLEMUR, in *Geography*, a town of Persia, in the province of Ghilan; 90 miles N.W. of Reshd.

HOWITZERS, in *Artillery*, are a kind of mortars, invented by the Germans about the year 1593 or 1594, which are mounted upon carriages like travelling gun-carriages, and have their trunnions placed nearly in the middle. The construction of howitzers is as various as that of mortars, excepting the chambers, which are all cylindrical. They are distinguished by the diameter of the bore, *e. g.* a ten inch howitzer is that, the diameter of which is 10 inches. Howitzers are capable of doing great execution, by firing shells and grapes of shots, in a siege where the distance is small, and in the field, if they were placed in the flanks or between the battalions. They are also more easily carried from one place to another than mortars. For the dimensions of different howitzers, and remarks on their construction, the reader may consult the article CANNON.

HOWKER, or HOOKER, a vessel much used by the Dutch; built something like a pink, but rigged and masted like a hoy.

Howkers carry from 50 to 200 ton; and with a small number of hands will go to the East Indies. They are commonly navigated with two masts, *viz.* a main-mast and a

wise-mast. They tack soon and short, will sail well, and lie near the wind, and live almost in any sea.

HOWLE, in *Ship-Building*. When the foot-hooks of a ship are scarfed into the ground-timbers, and bolted, and then the plank laid on them up to the orlop, the carpenters say, they begin to make the ship howle.

HOWSTACK, in *Geography*, one of the smaller Shetland islands, near the E. coast of Mainland. N. lat. $60^{\circ} 23'$. W. long. $1^{\circ} 10'$.

HOWTH, a peninsula on the W. coast of Ireland, which stretches to the eastward, on the north of Dublin bay. The hill of Howth is an important guide to the mariner, and a light-house has been erected on it in a conspicuous situation. As, however, the bay of Dublin is often difficult of access, and as the bar is a great impediment to the sailing of the packets at a fixed hour, the attention of government has been directed to the forming of an harbour on the north side of the peninsula of Howth; and a very fine pier is now (1811) erecting for this purpose under the direction of able engineers. It is expected that this new harbour will not only answer as a much better station for the packet-boats, but will also contribute to improve the trade of Dublin. The pier commences nearly under the small town of Howth, and extends towards Ireland's eye. The point of Howth is in N. lat. $53^{\circ} 21'$. W. long. $6^{\circ} 3'$.

HOWTH, a small post-town of the county of Dublin, province of Leinster, Ireland, on the northern side of the peninsula noticed in the last article. It is seven miles from Dublin.

HOXTER, a town of Westphalia, belonging to the abbey of Corvey, three miles N.W. of it, but given to the king of Prussia in 1802.

HOY, one of the larger Orkney islands, about 11 miles long and more than three broad, separated from Pomona by a channel about a mile and a half wide. Round the coast are several bays, in which there is good fishing. The principal places are Hoy and Southwalls. N. lat. $58^{\circ} 43'$. W. long. $3^{\circ} 7'$.

HOY, a small vessel or bark, usually rigged like a sloop, and employed for carrying passengers and luggage from one place to another, particularly on the sea-coast. In Holland the hoy has two masts; in England it has but one, when the main-sail is sometimes extended by a boom, and sometimes without it.

Hoy Head, in *Geography*, a cape on the W. coast of the island of Hoy. N. lat. $58^{\circ} 48'$. W. long. $3^{\circ} 12'$.

HOYA, in *Botany*, named by Mr. Brown in honour of Mr. Thomas Hoy, F.L.S. an experienced botanist, and able cultivator. Brown Tr. of the Wernerian Society, v. 1. 26. *Afsclep.* 15. Prodr. Nov. Holl. v. 1. 459.—Class and order, *Pentandria Digynia*. Nat. Ord. *Gentortæ*, Linn. *Apocineæ*, Juss.

Ess. Ch. Corolla wheel-shaped, five-cleft. Crown of the stamens in five depressed fleshy leaves, whose inner angle extends into a tooth over each anther. Anthers terminated by a membrane; masses of pollen attached by their base, converging, compressed. Stigma pointless. Follicles smooth. Seeds comose.

A genus of twining or decumbent shrubs, with opposite leaves, and many-flowered umbels standing between the foot-stalks. Two species only are defined by Mr. Brown, though he suspects the first of them may prove, when properly examined, to comprehend several hitherto confounded.

1. *H. carnosa*. (*Afsclepias carnosa*; Linn. Suppl. 170. Willd. Sp. Pl. v. 1. 1264. Sims in Curt. Mag. t. 788. Sm. Exot. Bot. v. 2. 21. t. 70. *Stapelia chinensis*; Lour. Cochinch. 205.)—Leaves elliptic-oblong, fleshy. Corolla

downy. Leaflets of the crown furrowed underneath.—Native of various parts of Asia, as well as of New Holland, within the tropics. The late Hon. Mrs. Barrington received the living plant from the straits of Sunda, and it flowered in her stove for several successive seasons, from May to July. The whole shrub is succulent and smooth. Stem climbing, round, downy above. Leaves two or three inches long, slightly revolute, pale beneath, on thick stalks. Flowers extremely beautiful and singular, in large globose umbels, smelling like a mixture of honey and the Peruvian Heliotrope. They are blush-coloured, with a purple centre; their corolla downy; the star-like crown smooth and polished, like porcelain.

2. *H. viridiflora*. (*Afsclepias volubilis*; Linn. Suppl. 170. Watta-kaka-codi; Rheede Malab. v. 9. 25. t. 15.)—Leaves ovate, pointed, membranous, smooth, as well as the corolla. Crown without furrows. Brown. Native of woods in Ceylon. Koenig. Smooth in all its parts. Leaves ovate or heart-shaped. Flowers green, without scent.

HOYA, in *Geography*, a principality of Germany, bounded on the N. by the county of Delmenhorst, the territory of Bremen, and the Weser, on the E. by the principalities of Luneberg and Calenberg, on the south by the principality of Minden, and on the W. by the county of Diepholz; about 32 miles long and 29 broad. In this district the heaths are large and the soil is sandy; nevertheless it contains some good pastures and arable lands, producing wheat, rye, barley, oats, flax, and buck-wheat. On the sides of the rivers are good meadows. The chief rivers are the Weser and the Aller. The inhabitants are partly employed in agriculture and breeding of cattle, and rearing of bees, and partly in manufacturing linen, woollen, stockings, &c. Most of the peasants are bondsmen. The country comprehends 54 parishes, in which Lutheranism is professed. Hoya was annexed to the dominions of the elector of Hanover in 1705; a small part excepted, which belonged to Hesse-Cassel. It contains 17 small towns, besides the capital of the same name, situated on the Weser. N. lat. $52^{\circ} 51'$. E. long. $9^{\circ} 12'$.

HOYA, *La*, a town of Mexico, in the province of New Biscay; 90 miles N.W. of Parral.

HOYACHU, in *Botany*, the name given by the Chinese to the acacia tree. They make great use of this tree in arts and medicine. They have a way of striking a fine yellow upon paper with its flowers; and they give the seeds in several diseases, in some of which, as in the dysentery and hæmorrhages, they are of great service. But, beside these, they make an odd medicine of them, which they take with great readiness for purposes it can never answer. They pick out the seeds carefully from the pods, as soon as ripe; they put these into a flat vessel, and cover them with ox's gall; this is to be set for a hundred days to dry, in a place where the sun does not come; after this, one of these seeds is to be swallowed every day before the first meal; and, by continuing this a proper time, they say the eye-sight, if lost, is restored, and their gray hairs become black. Observ. sur les Coutumes de l'Asie, p. 240.

HOYER, in *Geography*, a town of Denmark, in the duchy of Sleswick, with a harbour for small vessels, situated on the coast of the North sea, celebrated for its oyster fishery; 6 miles W. of Tondern.

HOYERSWERDA, a town of Lusatia, on the river Elften; 34 miles N.N.E. of Dresden. N. lat. $51^{\circ} 26'$. E. long. $14^{\circ} 16'$.

HOYLAND, a town of Norway, in the diocese of Drontheim; 92 miles N.N.E. of Drontheim.

HOYLE LOUGH, one of the many large lakes in the county

county of Westmeath, province of Leinster, Ireland, and remarkable for the circumstance of two rivers flowing in opposite directions from it. This lake is about 3 miles N. from Mullingar.

HOZA, a town of Lithuania, in the palatinate of Troki; 8 miles N. of Grodno.

HOZARDARA, a mountain of Persia, in the province of Irak; 21 miles S. of Ispahan.

HOZIER, PETER D', *Seigneur DE LA GARDE*, in Provence, a gentleman distinguished by his genealogical and historical researches, was born at Marfeilles in 1592. He received a good education, and then entered into the army under the count de Crequi, the genealogy of whose family he drew up. His success in this attempt caused him to be employed by several other noble families in a similar service. To favour his pursuits, he obtained, in 1620, a place among the gentlemen of the king's household. He was raised to other posts of honour, and in 1628 the order of St. Michael was conferred on him by Lewis XIII. He was, immediately after this, pensioned by the court, expressly for the purpose of affording him leisure for his curious researches concerning the illustrious families of the kingdom, of which, by his long labours, he had acquired a particular knowledge. In 1642, he was made *maitre-d'hôtel* to his majesty, and in 1654 was raised to the dignity of counsellor of state. He died at Paris in 1660. He was author of "A History of Brittany," in folio, and a number of genealogies, some of which were printed, and others left in MS. His private character was highly estimable; and so good was his memory, that he was able to answer at once any question concerning arms, contracts, affinities, dates, &c. relative to all the families which had been the subjects of his enquiries, so that it was said jokingly, "that he must needs have been present at all the marriages and baptisms in the universe." He left a son Charles-René d', who succeeded him in the office of judge of arms, and was honoured by the duke of Savoy with the knighthood of St. Maurice. He died at Paris in 1732, and had been distinguished by his knowledge of heraldry. He had written several works by order of Lewis XIV., particularly "Le Nobiliaire de Champagne." The nephew of this gentleman, Lewis Peter d'Hozier, was also his successor in office: he died in 1767. During the period of his administration appeared "L'Armorial ou Registres de la Noblesse de France," in ten vols., folio. Moreri.

HOZING of DOGS, the cutting out the balls of their feet. See EXPEDITATION.

HOZOW, in *Geography*, a town of Poland, in the palatinate of Kiev; 30 miles S.W. of Bialacerkiev.

HRADEK, a town of Bohemia, in the circle of Konigingratz; 12 miles S.E. of Konigingratz.

HRADISCH, or HRADISTA, a town of Moravia, capital of a circle of the same name; seated on an island in the river Moraw, famous for its excellent wine and fruit; 30 miles S. of Olmutz. N. lat. 49° 5'. E. long. 17° 24'.

HRADITZ, a town of Bohemia, in the circle of Rakonitz; 15 miles S.W. of Rakonitz.

HRASGRAD, a town of European Turkey, in Bulgaria; 32 miles S. of Ruscek.

HREBNIA, a town of Lithuania, in the palatinate of Minsk; 16 miles S.S.E. of Minsk.

HRESK, a town of Lithuania, in the palatinate of Novogrodek; 10 miles N.N.E. of Sluck.

HROZOW, a town of Lithuania, in the palatinate of Novogrodek; 18 miles N. of Sluck.

HUA. See FAIFO.

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HUACRE-CHUCO, a town of Peru, in the audience of Lima, and jurisdiction of Guamalies.

HUAHEINE, or HUAHENE, one of the Society islands, in the South Pacific ocean, situated in S. lat. 16° 43', W. long. 150° 52', first discovered by Cook in 1769, and visited again in 1777, when he left Omai, after his visit to England, in possession of a house and land, which he took care to provide for him. This island is distant from Otaheite about 31 leagues, in the direction of N. 58° W., and is about seven leagues in compass. Its surface is hilly and uneven, and it has a safe and commodious harbour, called by the natives "Owalle," or "Owharre," lying on the W. side, under the northernmost high land, and within the north end of the reef, which passes along that side of the island. This harbour may be entered by two inlets or openings through the reef, about 1½ mile distant from each other: the southernmost being the widest, and having on the south side of it a very small sandy island. The productions of this island are much the same with those of Otaheite, but about a month forwarder. Of the cocoa-nuts the inhabitants make a food which they called "Poe," by mixing them with yams; they scrape both fine, and having incorporated the powder, they put it into a wooden trough, with a number of hot stones, by which they make a kind of oily hasty-pudding, which the English sailors liked very well, especially when fried. The inhabitants are nearly the same with those of Otaheite, with regard to person, dress, language, and other circumstances pertaining to their disposition and character. They are, however, of a larger size, and of a stouter structure. Mr. (sir Joseph) Banks measured one of these men, and found him to be six feet three inches and a half high; but they are invincibly lazy. The women were fairer than those of Otaheite, and in general more handsome. Persons of both sexes seemed to be less timid and less curious. Although they were not strictly honest, yet it is acknowledged, to their honour, that when they understood that one of their number had been detected in the act of stealing, they manifested strong signs of disapprobation, and prescribed a good beating for the thief, which was immediately administered. In this island they observed a kind of chest or ark, the lid of which was nicely sewed on, and thatched very neatly with palm-nut leaves, it was fixed upon two poles, and supported on little arches of wood neatly carved; the poles served to remove it from one place to another. In one part of it was a square hole, in the middle of which was a ring, touching the sides, and leaving the angles open, so as to form a round hole within a square one. See ARK.

HUALE, a town of Arabia, in the province of Hadjar, on the W. coast of the Persian gulf. N. lat. 25° 49'. E. long. 50°.

HVALSOE, a small island on the North sea, near the coast of Norway. N. lat. 69° 40'.

HUANACO, in *Zoology*, a Peruvian animal of the camel tribe. See CAMELUS *Huanacus*.

HUARTE, JOHN, in *Biography*, a native of French Navarre, who was distinguished in the seventeenth century by a Spanish work of great merit, entitled, "A Trial of the Wits, or a Treatise on the different Kinds of Genius among Men, with Rules and Directions, shewing to what Kind of Study any Person is best adapted." The book has been translated into English. Moreri.

HUBAIAN, in *Geography*, a town of Persia, in the province of Farsistan; 50 miles E. of Baiza.

HUBALD, HUCBALD, or HUGBALD, in *Biography*, a monk of St. Amand, in Flanders, who preceded Guido more than one hundred years, was contemporary with Remi, and author of a treatise on music, which is still subsisting in

the king of France's library, under the title of "Enchiridion Musicae," No. 7202, transcribed in the eleventh century. In this work there is a kind of gammut, or expedient for delineating the several sounds of the scale, in a way wholly different from his predecessors; but the method of Guido not only superseded this, but, by degrees, effaced the knowledge and remembrance of every other that had been adopted in the different countries and convents of Europe. However, the awkward attempts at singing in consonance, which appear in this tract, are curious, and clearly prove that Guido neither invented, nor, rude as it was before his time, much contributed to the improvement of this art.

Hubald places the whole force of his *diaphonics*, or harmony, upon fourths and fifths.

The good monk says, if to these two parts two more are added in the octave, the harmony will be complete: and then writes, after his manner, the same fragment of melody over again, with a very small change at the end in the accompaniment, which he calls *organum*; which see. It is easy for a professed musician to divine what a strange effect such a combination of sounds would have. At length, however, growing still more daring in his experiments, in the eighteenth chapter the question is, "How much higher the principal melody may go than the *organum*," and the ingenious monk determines the point by allowing that while one voice remains in the same tone, the other may wander about at its pleasure. The succession of four 3ds in the next example, renders it more like music of this world, in point of harmony, than any of the rest. And, indeed, a very few alterations in the under part would make the whole fragment supportable to modern ears.

Hubald, the respectable author of these curious specimens of crude harmony, was not only a musician but a poet; and an idea may be formed of his patience and perseverance, if not of his genius, from a circumstance related by Sigebert, the author of his life, by which it appears that he vanquished a much greater difficulty in poetry than the lippogrammists of antiquity ever attempted: for they only communicated a single letter of the alphabet from a whole poem: but this determined monk composed three hundred verses in praise of *baldfness*, which he addressed to the emperor Charles the Bald, and in which he obliged the letter C to take the lead in every word, as the initial of his patron's name and infirmity, as thus:

"Carmina Clarifonæ Calvis Cantate Camœnæ."

These examples will sufficiently indicate the infant state of counterpoint previous to the time of Guido, and enable the reader to judge whether it was much improved by his discoveries.

Hubald died in 930, at the age of ninety. See COUNTERPOINT.

HUBARA, or HOUBARA of *Buffen*, in *Ornithology*, the ruffed bustard of Latham. See OTIS.

HUBARLIK, in *Geography*, a town of Prussian Lithuania; 25 miles E. of Bialacerkiev.

HUBBARDSTON, a township of America, in Worcester county, Massachusetts, incorporated in 1767; containing 1113 inhabitants; 60 miles W. of Boston.

HUBBER, a small island in the Baltic, between the island of Usedom and the continent. N. lat. 54° 38'. E. long. 13° 40'.

HUBBERTON, a township in Rutland county, Vermont, containing 642 inhabitants; 50 miles N. of Bennington.

HUBELI, a town of Hindoostan, in the country of Sanore; 20 miles N.W. of Sanore. N. lat. 25° 53'. E. long. 75° 24'.

HUBER, JOHN-JAMES, in *Biography*, a celebrated anatomist, was born at Balle in 1707. He was a pupil of the great Haller at Berne in 1730; after which he studied at Strasburgh, and in 1733 took the degree of M.D. at his native place. He visited Paris in 1735, and in the same year was appointed physician to the court of Baden Dourlach. At the request of his preceptor, Haller, who had removed to Göttingen he examined the Graubund mountains in Switzerland, and transmitted to him his collection of plants found in that district, previous to the publication of Haller's work on the botany of Switzerland. The author acknowledged the services of Huber in his preface, and invited him to Göttingen, in 1738, to be dissector. He speedily rose to considerable reputation, being made extraordinary professor of anatomy in that city in 1739; professor in the Caroline college at Cassel, with the rank of court-physician, in 1742; and counsellor of state and body-physician to the prince, in 1748; which office he continued to fill during thirty years, and died in 1778. He had the honour of being elected, without his knowledge, into the most celebrated of the learned societies of Europe. The chief objects of his research were the structure and ramifications of the spinal marrow, and the nerves originating from it; the supposed influence which the imagination of the mother has over the child; and the cause of miscarriages. His principal works are entitled, "Commentatio de Medulla Spinali, speciatim de Nervis ab ea provenientiibus," cum icon. Göett. 1741, 4to. "Commentatio de Vaginæ Uteri structura rugosa, necnon de Hymene," 1742, 4to. He published a letter in the *Philos. Transactions*, vol. 46. "De cadavere aperto in quo non existit vesica fellea, et de Sterno gibboso." Gen. Biog.

HUBERT, MATTHEW, was born of humble parents, at Chatillon, on the Maine, in the year 1640. He was educated for the church, and was admitted into holy orders as soon as he had attained the proper age. His eloquence as a preacher caused him to be noticed, and followed by vast crowds. His popularity did not produce in his mind any ill effects: he was distinguished for piety, humility, and a general kindness and suavity of manners. He was not ashamed, at the highest pitch of his popularity, of his low origin, or of the obligations he had been under to his friends. Meeting once, in company, with a person of distinction, who observed to him that he recognized in Hubert an old fellow-student; he replied, with emotions of pure and unfeigned gratitude, "That is a circumstance which I can never forget, for you had the goodness not only to furnish me with books, but to bestow on me a part of your clothes." He died in 1717 at the age of 77. Six volumes of his sermons were published by father Monteuil in 1725, which were, at one time, as much read in the closet, as they had been admired from the pulpit. Moreri.

HUBERT, *St.*, anciently *Andainum*, or *Andagium*, in *Geography*, an ancient town of France, in the department of the Forêts, situated in the forest of Ardennes, on the small river Homme. It took its name from an abbey of Benedictines, where the remains of St. Hubert were deposited in 825, in compliance with the decree of a council, held at Aix-la-Chapelle; 25 miles N.W. of Arlon. N. lat. 50° 1'. E. long. 5° 27'.

HUBERT, *St.*, *Order of*, an order of knighthood, instituted, in the duchy of Juliers, by Gerard V., duke of Juliers, in memory of a victory gained by him over Arnold of Egmont, on St. Hubert's day, in the year 1447. In 1709 it was revived by John-William, elector-palatine of the Rhine. The reigning elector-palatine is grand master. It was also used at Wurtemberg, where the reigning duke of Wurtemberg

temberg was grand master. The collar of the order is a chain of gold, to which is pendent a cross pattée, set with jewels, from the angles of which issue rays of gold; on the centre is a medallion of gold enamelled, with a portrait of St. Hubert, kneeling before a crucifix, placed between the horns of a stag standing in a wood, all proper. The knights also wear, on the left side of their coat, a circle surrounded with rays, embroidered in gold; and in the middle of it, on a red ground, some German words, signifying "Keep firm in the Faith." At all times, except festival days, they wear the cross tied to a red ribbon, which passes scarf-wise from the left shoulder to the right thigh.

HUBKOW, in *Geography*, a town of Poland, in Volhynia; 64 miles N.W. of Zytomiers.

HUBNER, JOHN, in *Biography*, a German historian and geographer, born in 1668, was celebrated likewise as an instructor of youth, and became rector of the school of Hamburg. He died in 1732, and is known to posterity by several useful compendiums in history, geography, &c., which have been translated into several languages. His chief works are, "Bibliotheca Historica Hamburgensis;" "Museum Geographicum." Moreri.

HUBS, in *Rural Economy*, a term applied in some districts to the names of wheels of certain kinds.

HUCAMYBUFF, in *Agriculture*, a term applied in some places to such coarse tufty grass as remains after eating down the more luxuriant pasture lands by live stock, and which is afterwards mown and made into rough sort of hay. This sort of work is in other districts often denominated *hobbing*. It is often pronounced *hogamybuff* by the farmers.

HU-CHOU-LO-TCHUAN, in *Geography*, a town of Corea; 600 miles E.N.E. of Peking. N. lat. 42° 27'. E. long. 128° 51'.

HUCH, or **HUCHO**, in *Ichthyology*. See *SALMO Hucho*.

HUCKABACK, in *Commerce*, is a kind of linen, on which the figures are raised.

HUCKESWAGEN, in *Geography*, a town of the duchy of Berg; 24 miles E.S.E. of Dusseldorp.

HUCKLE BONE, the hip-bone. See *COXA Offa*.

HUCQUELIERS, in *Geography*, a town of France, in the department of the straits of Calais, and chief place of a canton, in the district of Montreuil; nine miles N.E. of it. The place contains 710, and the canton 11,967 inhabitants, on a territory of 242½ kilometres, in 24 communes.

HUCKSTER, one that sells provisions or small wares by retail.

HUD SHEAF, in *Agriculture*, the name by which the sheaf that covers the top of the haddock is frequently known. See **HUDDER**.

HUDEDE, JOHN, in *Biography*, a burgomaster of Amsterdam, who flourished in the seventeenth century, and died in 1704, was eminent in his character of a magistrate, and possessed a commanding genius for mathematical studies. Much was expected from his talents as a man of science, but he was diverted from the pursuit by state affairs. He was nevertheless the author of several excellent little pieces "On the Reduction of Equations;" "De Maximis et Minimis," and his "Commentary on the Geometry of Descartes," &c. Moreri.

HUDELGUR, in *Geography*, a town of Hindoostan, in Orissa; 15 miles N. of Boad.

HUDDER, in *Agriculture*, a name given, in many counties, to the sheaf by which the haddock is covered and protected at top from the effects of rain, &c.

HUDDERSFIELD, or **HUTHERSFIELD**, in *Geogra-*

phy, a market-town and parish in the West Riding of Yorkshire, England, is a large improving place, noted for being the centre of a manufacturing district. The parish consists of the following hamlets, or townships; Quarmbury with Lindley, Longwood, Golcarr, and part of Scamandan, Slaughtwaite, and Marsden, all of which are chiefly occupied by persons engaged in different branches of the woollen manufacture. The goods made here consist chiefly of narrow plain cloths, both fine and coarse, with some broad cloths, elastics, beaverettes, kerseymeres, &c. For the display and sale of these, a commodious building, of a circular form, called the Cloth-hall, was erected here, in 1765, by sir John Ramsden, who possesses nearly the whole of the land on which the town is built, and also a great many houses. The building consists of two stories, and is divided into two courts. All the windows open to these areas. A market is held here every Tuesday, which commences early in the morning, and is closed at half past twelve o'clock at noon. The resort of manufacturers, wool-staplers, &c. to this mart, is very numerous, many of whom come from Leeds, Halifax, Wakefield, and other places in the vicinity. Besides the market here are three annual fairs. The police of the town is under a constable and his deputy, who are annually chosen, or rather appointed, by the Ramsden family at their court-leet held at Almonsbury. Huddersfield is 14 miles west of Wakefield, and 188 from London. In the year 1800 it contained 1398 houses, and 7268 inhabitants. In the vicinity of the town are the following seats: Whitley-hall, belonging to the Beaumont family; Kirklees-hall, the property of sir George Armytage, bart.; Fixly-hall, the seat of Thomas Thornhill, esq.; and Millsbridge, belonging to W. Radcliffe, esq. West of Almonsbury is an eminence called Castle-hill, on the summit of which is an ancient entrenchment, supposed by some topographers to have been the Roman Cambodunum; but Mr. Watson, in his History of Halifax, attributes it to the Saxons, and thinks, that Slack, to the north of Huddersfield, was the site of that station. The Roman road from Manchester, Mancunium, to York, Eboracum, passed near Almonsbury, and the name, and contiguity to the Roman road, are against Mr. Watson's conjectures.

HUDDERSFIELD Canal, is an inland navigation in Yorkshire and Lancashire, begun in pursuance of acts of parliament passed in the years 1793 and 1800, of which we gave an account in our article **CANAL**, and have here only to add, that the locks are 72 feet long and nine feet wide, and generally rise about ten feet: there is a tunnel of about 200 yards long, S.E. of Scout Mill, near Ashton-under-line: an aqueduct of cast-iron, 50 or 60 feet long, having a stone bridge of one arch by its side for the towing-path: these were erected in 1801 and 1802. At Wright's Mill the canal crosses the Tame, to its western side, just after it has entered Yorkshire, on a two-arch stone aqueduct. The canal has been now a long time completed, and is used, from its western end, about eight miles to Woolroyd, and from its eastern end to Diglee in Sadleworth; and at this time, the great tunnel 3¼ miles long and 250 yards beneath Pule hill on the grand ridge, is, we believe, very nearly finished. The bridges on this canal have been imprudently constructed, many of them, even under the public roads, without towing-paths under them, and must be taken down and widened. On the 29th of November, 1810, a second accident happened to the reservoirs of this canal, when the Driggle reservoir on Stanedge, containing 28 acres, burst, and inundated the vallies below.

HUD-SJERA, a town of Arabia Felix, in the province of Yemen; 36 miles W.N.W. of Sana.

HUDSON.

HUDSON, HENRY, in *Biography*, a distinguished naval commander, of whom nothing is known till about the year 1607. At this period he was sent out on an expedition, by some London merchants, in a small vessel for exploring a north-east passage to Japan and China. This daring adventurer set sail on the 1st of May with a crew of only ten men and a boy, besides himself, and proceeded beyond the 80th degree of latitude in the North sea, when, being stopped by the ice, they returned and arrived at England in the following September. In a second voyage he landed at Nova Zembla, but proceeded no farther east, and returned in August. In 1609 he was fitted out for a third voyage by some merchants of the Dutch-East-India-company, and after another unsuccessful attempt to the eastward he steered for the American coast, and went down as far as Chesapeake-bay. His crew, dissatisfied with their want of success, prevented him from endeavouring to find a westerly passage through Davis's strait, and he returned in November. In a fourth voyage he came, June 4th 1610, within sight of Greenland, and proceeding westward, he reached, in sixty degrees of latitude, the mouth of the strait bearing his name. Through this he advanced along the coast of Labrador, to which he gave the name of Nova Britannia, till it issued in the vast bay which perpetuates the memory of Hudson. At first he thought he had discovered the long sought passage to the north-west, but experience taught him that it was only a bay, and he resolved to winter in it. They found provisions during the winter season, but at the approach of spring they were reduced to the utmost difficulties. The commander forgot his own sufferings in the hope of making new discoveries, but his crew, not having the same motives for patience and perseverance, began to mutiny, and he threatened to set them on shore. They, on the other hand, willing to anticipate the execution of his purpose, seized Mr. Hudson, his son, and seven others, who were most attached to him, and putting them on shore at the west end of the straits, left them to perish by the waves, or other hardships. Such was the end of Henry Hudson, a man illustrious in the annals of naval discovery.

HUDSON, JOHN, was born in 1662 at Widehope, near Cockermouth, where he received the early part of his education, and at the age of fourteen he was admitted into Queen's college, Oxford. In 1684 he took his degree of M.A. and then removed to University college, of which, in two years after, he was chosen fellow. In 1701 he was elected head-keeper of the Bodleian library, against the competition of the learned Wallis, afterwards Arabic professor. He now took his degree of D.D., and in 1712 he was made principal of St. Mary-hall. He employed the advantages of his situation in editing several of the most valuable authors of antiquity. Of these the following may be mentioned, "Velleius Paterculus;" "Thucydides;" "Geographiæ Veteris Scriptores Græci Minores;" "Dionysius Halicarnassus;" and "Longinus." The editions of Dr. Hudson are valued for their elegance and correctness. He never possessed any ecclesiastical preferment, and died at St. Mary-hall in Nov. 1719. *Biog. Brit.*

HUDSON, THOMAS, a portrait painter, who enjoyed for many years the principal repute and practice of the profession in London, after Richardson, under whom he studied, and Jervas were gone. Yet, though confessedly the best of his time, it is but small praise to say so of him; he will be longer remembered as the master of an illustrious pupil who soon eclipsed him, when he began to appear before the public, and who yet remains unrivalled, sir Joshua Reynolds.

Hudson certainly improved upon the taste of the artists

who immediately preceded him, and who had fallen in succession from Kneller, into the utmost imbecility of practice as well as feeling in the art. For a while his success was interrupted by Vanloo and Liotard, but the English gentry in general were faithful to their compatriot, and were content with his honest similitudes, with fair tied wigs, velvet coats and white fatten waistcoats, duly gilt and embroidered.

When Reynolds began to practise and gain fame, Hudson was advanced in years, and having acquired an independency of fortune, he retired and left the field to his youthful rival, after having finished his most capital performance, the family piece of Charles duke of Marlborough.

He went to reside at a beautiful villa which he built at Twickenham, where he died in 1779, at the age of 78. He was twice married, first to the daughter of his master Richardson, and afterwards, towards the close of his life, to a Mrs. Fiennes, a gentlewoman of good fortune, to whom he bequeathed his villa, with an excellent collection of cabinet pictures and drawings by the old masters.

HUDSON, WILLIAM, one of the earliest Linnæan botanists in England, was born in Westmoreland, about the year 1730. He served his apprenticeship to an apothecary in Panton street, Haymarket, to whose business he succeeded, and with whose widow and daughters he continued to reside. His acquaintance with the amiable and learned Mr. Benjamin Stillingfleet, greatly advanced his taste and information in natural history. This gentleman directed his attention to the writings of Linnæus, and gave his mind that correct and scientific turn, which caused him to take the lead as a classical English botanist, and induced him to become the author of the *Flora Anglica*, published in 1762, in one volume octavo. The plan of this book was, taking Ray's *Synopsis* as a ground-work, to dispose his plants in order, according to the Linnæan system and nomenclature, with such additions of new species, or of new places of growth, as the author or his friends were able to furnish. The synonyms of the most valuable authors, since the time of Ray or Dillenius, were superadded, as well as descriptions of new or rare plants; and even new specific characters, wherever the English specimens did not well answer to the definitions in Linnæus. Some few generic alterations were also hazarded; but for the most part the Linnæan definitions in this department were relied on. Many synonyms also were copied from Linnæus or other writers, as appears by errors of the press retained in the transcribing. Of this too common fault we have had occasion to take notice on some other occasions, but we by no means intend to assert that Mr. Hudson consulted none of the authors he quoted. On the contrary, we believe such blind transcription was more rarely practised by him than by many other writers. The particular places of growth of the rarer species were given in Ray's manner, in English, though the rest of the book was Latin. The elegant preface was written by Mr. Stillingfleet, and probably the concise, but not less elegant, dedication to the late duke of Northumberland, "*artium, tum utilium, tum elegantiorum, judici et patrono.*"

This publication gave Mr. Hudson a considerable rank as a botanist, not only in his own country, but on the continent, and derived no small advantage from a comparison with Dr. Hill's attempt of the same kind. He had indeed previously, in the course of his medical practice, formed some valuable connexions, which were cemented by botanical taste, and he found leisure, from time to time, to visit several friends in the course of his botanical expeditions, especially in Devonshire. His correspondence with Linnæus, Haller, and others, as well as amongst his countrymen, was frequent

frequent and very useful to him in the course of his studies, which were extended not only to botany in all its cryptographic *minutia*, but, with great ardour also, to insects, shells, and other branches of British zoology. He was elected a fellow of the Royal Society Nov. 5th, and admitted Nov. 12th 1761. He took the lead very much in the affairs of the Apothecaries' company, and was their botanical demonstrator in the Chelsea garden for many years.

Mr. Hudson, having never married, continued to reside in Panton street with the last-surviving daughter of his friend and master, an amiable and valuable woman, married to Mr. Hole; nor did he remit in his attention to science or business. There the writer of the present narrative often visited him, and experienced his kind, though somewhat reserved, communications and favour. His *Flora* being grown very scarce, inasmuch that a copy had been sold for near twenty times its original price, he published, in 1778, a new edition, in two volumes, with many additions, and various alterations. Some of the latter, respecting the species or varieties of grasses, have been thought less advantageous than the rest. On the whole, however, this edition was worthy of its author, and of the advanced state of the science. The *Flora Scotica* of his contemporary Mr. Lightfoot, a man of more popular manners and style, will not bear a comparison with it for authenticity or originality, however pleasing and estimable for the graces it bestows on even the driest parts of the science.

The merits of the subject of this article were of a higher order. In his social intercourse he courted not the many, but was warmly attached to a few. His moral character was without a stain, and his mind was established on the soundest principles. His tranquillity received a dreadful shock in the winter of 1783, when his house, and the greater part of his literary treasures, were destroyed by a sudden fire, caused, as it was believed, by the villainy of a confidential servant, who knew of a considerable sum in money which his master had received a day or two before. No traces of the gold were found amongst the ruins. The servant, after a treacherous application for assistance, on the pretence of being totally destitute, disappeared. The property had, by accident, been for a short time only, uninsured, and the loss was therefore considerable, in a pecuniary point of view, to a man whose resources were not extensive. He bore the whole like a philosopher and a Christian, giving up his practice, and retiring, with Mr. and Mrs. Hole, to a more economical residence in Jermyn street, where he died May 23d 1793, Mrs. Hole surviving him but a few months.

The accident of the fire entirely defeated a project Mr. Hudson had for many years kept in view, of publishing a *Fauna Britannica*, on the plan of his *Flora*, for which he had long been collecting materials. His taste for his favourite pursuit remained to the last, unimpaired and unembittered by these disappointments. He became a fellow of the Linnæan Society early in 1791, liberally contributing to its infant funds, and attending the meetings as often as his now declining health would allow. His lungs had for many years been in an ulcerated state, and he laboured under frequent imposthumes in that part; but a succession of paralytic attacks appear to have been the more immediate cause of his dissolution. His resigned and placid exit was conformable to the tenour of his life. His remains were interred at the adjoining church of St. James's. "May the writer of this leave no more errors behind him; as an author, or as a man!" S.

HUDSON City, in *Geography*, a port of entry and post-town of America, in the county of Columbia, and state of

New York, on the E. side of Hudson river; 132 miles N. of New York city. This town was begun in 1783, on a spot, accessible by vessels of any size; and was laid out in squares, formed by spacious streets, crossing one another at right angles. Each square contains 30 lots, and each lot is 50 feet in front and 120 feet in depth. From the period of its commencement, the increase of this town has been wonderfully rapid; in two years 150 dwelling houses were erected, with shops, barns, warehouses, and other buildings, a covered rope-walk, and one of the best distilleries in America; and the number of inhabitants collected in this short interval of time amounted to 1500. Since the year 1786, a printing-office has been established, several public buildings have been erected, with dwelling-houses, stores, &c. The town is abundantly supplied with water, conveyed by pipes to their cellars, from a spring at the distance of two miles. To the southward is a large bay, and it commands extensive views from the eminence on which it is situated. The river is a mile wide, and forms towards the north a number of creeks and bays. From the S.E. to the S.W. the city is screened by hills, and the distant prospect is terminated by a chain of stupendous mountains, called the "Kaats' hill." Here is a bank, called the "bank of Columbia, whose capital may not exceed 160,000 dollars, composed of 400 shares, at 400 dollars each. This city is governed by a mayor, recorder, four aldermen, four assistants, and other officers. The number of inhabitants in Hudson township is 3664. N. lat. 42° 14'.

HUDSON, a flourishing town in Trumbull county, and state of Ohio, about 35 miles W. of Warren, containing about 200 inhabitants.

HUDSON'S Bay, an inland sea, so called from the voyager Hudson, who in 1610 discovered the straits which bear his name, and this inland sea, approaching the Baltic in size, which has, however, been denominated Hudson's bay. Hudson's sea may be considered as extending from W. long. 70°, to long. 115°, or 45° of longitude, which, allowing the degree only 30 miles, will be 1350 geographical miles in length, and its medial breadth about 350. The entrance of this bay from the ocean, after leaving to the N. cape Farewell and Davis's straits, is between Resolution isles on the N., and Button's isles on the Labrador coast, to the S., forming the eastern extremity of the straits distinguished by the name of the discoverer. The shores are generally rocky and precipitous; with some large beaches; the isles of Salisbury, Nottingham, and Digges, are also very lofty and naked. The depth of water in the middle of the bay is 140 fathoms. From cape Churchill to the S. end of the bay are regular soundings; near the shore shallow with a muddy or sandy bottom. To the N. of Churchill, the soundings are irregular, the bottom rocky, and in some parts the rocks appear above the surface at low water. From Moose river, or the bottom of the bay, to Cape Churchill, the land is flat, marshy, and wooded with pines, birch, larch, and willows. From cape Churchill to Wager's water, the coasts are all high and rocky to the sea, and destitute of wood, except the mouths of Pockerekeko and Seal rivers. The hills on their back are naked, nor are there any traces of trees for a great distance inland. The mouths of all the rivers are filled with shoals, except that of Churchill, in which the largest ships may lie; but 10 miles higher, the channel is obstructed with sand-banks; and all the rivers, as far as they have been navigated, abound with rapids and cataracts, from 10 to 60 feet perpendicular. As far inland as the Hudson-bay Company have settlements, which is 600 miles to the W., at a place called "Hudson House," N. lat. 53°. W. long. 106° 27', is flat country. The climate

is almost always wintry, the hot weather in June, though violent, being of short duration. The snows begin to fail in October, and continue to fall at intervals during the winter; the ice on the rivers is eight feet thick. Port wine freezes in a solid mass, and brandy coagulates. The ice begins to disappear in May, and hot weather commences about the middle of June. Mock suns and halos are frequent and brilliant; the night is enlivened with the Aurora Borealis; and the stars appear with a fiery redness. Thunder, though not frequent, is very violent. The sea does not abound with fish, but it furnishes the common whale, and the beluga or white whale is taken in considerable numbers in June, when the rivers on the south have discharged their ice. Large sturgeons are also caught near Albany. Shell fish are very rare, common muscles excepted, which are frequent. Multitudes of birds retire to this remote country, as well as to Labrador and Newfoundland, from places most remotely south, perhaps from the Antilles; and some even of the most delicate little species. Most of them, with numbers of aquatic fowls, are seen returning southward, with their young broods to more favourable climates. The savages partly regulate their months by the appearance of birds. All the grouse kind, ravens, cinereous crows, titmouse, and Lapland finch, brave the severest winter; and several of the falcons and owls seek shelter in the woods. The rein deer pass in vast herds towards the N. in October, seeking the extreme cold. The male polar bears rove out at sea, on the floating ice, most of the winter, and till June: the females lie concealed in the woods, or beneath the banks of rivers till March, when they come out with their twin cubs, and bend their course to the sea in search of their consorts. The large tract of territory on the south of this sea is the property of the Hudson's Bay company, who derive their chief profits from furs. This sea has been repeatedly explored for a N.W. passage to no purpose. Chesterfield inlet, (see CHESTERFIELD,) stretches far to the W., and terminates in a magnificent lake of fresh water, communicating with this sea by a broad river; the adjacent land being level, rich in pasture, and abounding with deer. It is probably believed, that the Hudson sea on the N.E. opens into the Arctic ocean, where the perpetual ice presents an insurmountable barrier to commercial adventurers. The gulf, or sea of Davis, may be considered as part of the sea of Hudson, and probably joins the Arctic ocean.

The regions around Hudson's bay and that of Labrador have been sometimes called *New Britain* (which see). The parts on the W. of Hudson's bay have also been called *New North* and *South Wales*; while that on the E. is styled *East Main*. In the S., James's bay stretches inland about 300 miles by about 500 in breadth; and the most valuable settlements are in that vicinity, as Albany fort, Moose fort, and East Main factory. Further to the S. and on the confines of Upper Canada, are Brunswick house, Frederick house, and some others, belonging, probably, to the N.W. company. In the N., Severn house is at the mouth of a large river, which seems to flow from the lake of Winnipic. York fort stands on Nelson's river: and still further to the N. is Churchill fort, which seems to be the farthest settlement in that direction. To the W. the Hudson's Bay company had extended little further than Hudson's house; while the superior spirit of the N.W. company, established in 1784, has nearly approached the Pacific. The boundary between the Hudson's Bay company and Canada is understood to follow the ridge that gives source to the rivers flowing N. and S. as far as lake Annipeg, so that lat. 49° is said to form the limit. The most important rivers in this country are, the Nelson, or Saskatchewan, and the Severn: the comparative course of

the latter scarcely exceeding 400 British miles, but of great breadth and depth. In the S. the Albany, Moose, Abitib, and Harricana, are the most considerable; but all the rivers are impeded with falls and shoals. In the sea of Hudson are several high islands. Pennant's *Arctic Zoology*. Pinckerton's *Geog.* vol. iii.

HUDSON'S Bay Company. See COMPANY, and the preceding article.

HUDSON'S House, a factory belonging to the Hudson's Bay company in North America, on the W. side of the Saskatchewan river. N. lat. 53. W. long. 106 27'.

HUDSON'S Point, a cape of the island of Antigua, on the S.E. coast. N. lat. 17 12'. W. long. 61 23'.

HUDSON'S River, one of the largest and finest rivers in the United States of America, which rises in a mountainous country of New York, between the lakes Ontario and Champlain, and after pursuing a south-easterly course within six or eight miles of lake George, then a straight course E. and afterwards S. 12 or 15 W., discharges itself into York bay. The whole length is about 250 miles; from Albany to lake George the course is 65 miles, which is navigable only for batteaux, and has two portages, occasioned by falls, of half a mile each. The passage through the highlands, of 16 or 18 miles, affords a wild romantic scene. The bed of this river, which is deep and smooth to a surprising distance through a hilly, rocky country, and even through ridges of some of the highest mountains in the United States, must have been produced by some signal convulsion of nature. The tide flows a few miles above Albany, which is 160 miles from New York. The river is navigable for floops of 80 tons to Albany, and for ships to Hudson city. About 60 miles above New York the water becomes fresh. This river is stored with a variety of fish; and it affords singular advantages for carrying on the fur-trade with Canada, by means of the lakes: and its conveniences for internal commerce are very great.—Also, a river broad but short, emptying itself into Chesapeake bay, in Dorchester county, Maryland. Hill's Point, N.E. of it, closes the broad mouth of this river.

HUDSON'S Straits, or *Frobisher's Mistaken Strait*, the narrow sea between the Atlantic ocean and Hudson's bay, N. of Labrador. See HUDSON'S Bay.

HUDSON'S Bay Porcupine, in *Zoology*. See HYSTRIX *Dorsata*.

HUDSONIA, in *Botany*, named by Linnæus in honour of his friend and correspondent Mr. William Hudson, author of the *Flora Anglica*.—Linn. Mant. 11. Schreb. 322. Willd. Sp. Pl. v. 2. 858. Mart. Mill. Dict. v. 2. Juss. 162. Lamarck. Illustr. t. 401.—Class and order, *Dodecandria Monogynia*. Nat. Ord. *Ericis affinis*, Juss. *Hyperica*, Bergius.

Gen. Ch. Cal. Perianth inferior, in three deep, lanceolate, obtuse, rather concave segments. Cor. Petals five, sessile, ovate-oblong, obtuse, shorter than the calyx. Stam. Filaments 15 or 18, capillary, the length of the corolla; anthers roundish. Pist. Germen superior, ovate; style thread-shaped, the length of the stamens; stigma simple. Peric. Capsule cylindrical, half as long as the calyx, of one cell and three valves. Seeds three, rounded on one side, angular on the other.

Ess. Ch. Petals five. Calyx in three deep parallel segments. Stamens fifteen. Capsule superior, of one cell and three valves. Seeds three.

Obs. The characters are corrected from the description of Bergius, which escaped the notice of Schreber; who merely copied the *Mantissa*, in which there is said to be no corolla.

1. *H. ericoides*. Linn. Mant. 74. Willd. Hort. Berol. v. 1. t. 15. Bergius in Aët. Holm. for 1778. 19. t. 1; not 18. t. 2, as in Willdenow. (*Ericæformis suffrutex virginianus, floribus ægiguis, vasculo feminali oblongo trifariam diviso*; Pluk. Mant. 68.)—The only known species, a native of Virginia and other parts of North America, yet Michaux has it not. We saw it alive and in flower at Kew in the spring of 1809. The stem is shrubby, procumbent, round, with very numerous, ascending, compound leafy branches, greatly resembling a heath. Leaves scattered, small, needle-like, close-pressed, somewhat imbricated, acute, hairy, especially on the younger shoots. Flowers lateral, on slender, hairy, solitary, simple stalks longer than the leaves. Calyx externally downy, internally yellow. Petals and stamens of an uniform lemon-colour, much resembling some small *Hypericum*.

HUE, in *Painting*, signifies any degree of strength or vividness in a colour, from its greatest or deepest power to the weakest intimation of it.

HUE-AND-CRY, in *Law*, derived from the French *huer* and *crier*, which both signify *to shout*, or *cry aloud*, denotes the pursuit of one who has committed felony, &c. on the highway.

If a party robbed, or any in the company of one murdered or robbed, come to the constable of the next town, and require him to raise hue-and-cry, or to pursue the offender, describing him, and shewing, as near as he can, which way he is gone, the constable is forthwith to call for aid from the parish to seek the felon; and if he is not found there, he is to give the next constable warning, till he be apprehended, or at least pursued to the sea-side.

The Normans had a pursuit with a cry after offenders, not unlike this; which they called *clamor de baro*. See CLAMOR.

Hue is also used alone, ann. 1 Edw. I. stat. 2. In ancient records it is called *hutesum* & *clamor*, which properly signify a pursuit by horn and by voice.

This process of pursuing is mentioned by statute Westm. 1. 3 Edw. I. cap. 9. and 4 Edw. I. *de officio coronatoris*. But the principal statute relative to this matter is that of Winchester, 13 Edw. I. cap. 1. & 4. which directs, that from thenceforth every county shall be so well kept, that immediately upon robberies and felonies committed, fresh pursuit shall be made from town to town, and from county to county; and the hue-and-cry shall be raised upon the felons, and they who keep the town shall follow with hue-and-cry, with all the town and towns near; and so hue-and-cry shall be made from town to town, until they be taken and delivered to the sheriff. And that such hue-and-cry may more effectually be made, the hundred is bound by the same statute, cap. 3, to answer for all robberies therein committed, unless they take the felon, which is the foundation of an action against the hundred, in case of any loss by robbery. By stat. 27 Eliz. cap. 13. no hue-and-cry is sufficient, unless made with both horsemen and footmen. And by stat. 8 Geo. II. cap. 16. the constable or like officer refusing or neglecting to make hue-and-cry, forfeits 5*l.* and the whole vill or district is still in strictness liable to be amerced, according to the law of Alfred, if any felony be committed therein, and the felon escape. Hue-and-cry may be raised either by precept of a justice of the peace, or by a peace-officer, or by any private man that knows of a felony. (2 Hal. P. C. 100—104.) But if a man maliciously or wantonly raises a hue-and-cry, without cause, he shall be severely punished as a disturber of the public peace. 1 Hawk.

P. C. 75. Blackst. Comm. vol. iv. p. 290, &c. See HIGHWAYMEN.

In supplement to this ancient establishment, sir John Fielding's plan was instituted for the discovery of offenders, after they have escaped the fresh pursuit upon hue-and-cry, by sending immediate notice to a certain known office in London, from whence are issued weekly accounts to every part of the kingdom, describing the offence and the offenders with as much accuracy as the case will admit. By these means many notorious offenders have been apprehended, and much stolen property hath been recovered.

HUELAMO, in *Geography*, a town of Spain, in New Castile; 22 miles N.N.E. of Cuença.

HUELBA, or HUELVA, a town of Spain, in the province of Seville, situated on the coast of the Atlantic; three miles W. of Moguer. N. lat. 37° 13'. W. long. 7° 1'.

HUELGOAT, LE, a town of France, in the department of the Finisterre, and chief place of a canton, in the district of Chateaulin; nine miles N.W. of Carhaix. The place contains 766, and the canton 9496 inhabitants, on a territory of 305 kilometres, in seven communes.

HUELMA, a town of Spain, in Grenada; 13 miles S.W. of Grenada.

HUERNIA, in *Botany*, so called by Mr. R. Brown, "in memory of Justus Huernius, one of the earliest collectors of Cape plants, and from whose drawings the first account of *Stapelia* was taken," from which genus the present is separated.—Brown. Afclep. 11.—Class and order, *Pentandria Digynia*. Nat. Ord. *Contorta*, Linn. *Apocinea*, Juss.

Ess. Ch. Corolla bell-shaped, its limb in ten segments, the intermediate ones very small and tooth-like. Column of fructification concealed. Crown of the stamens double; the outer in five cloven segments; inner of five undivided awl-shaped leaves, gibbous at their base, alternate with the segments of the outer. Anthers simple at their summit; masses of pollen erect, attached by their base, cartilaginous and pellucid at one edge. Stigma pointless. Follicles nearly cylindrical, smooth. Seeds comose.

The plants which compose this genus have the remarkable fleshy, angular, and toothed habit of *Stapelia*, and the whole of the third section of that genus in Willd. Sp. Pl. v. 1. 1293, (with a ten-toothed corolla,) is thought to belong to *Huernia*. Mr. Brown has however examined only the *campanulata*, Masson. Stapel. t. 6; *venusta*, t. 3; and *guttata*, t. 4. They are all natives of the south of Africa. The flowers of these three are all pale yellow, richly dotted with red or dark purple. The *reticulata*, t. 2, which has every appearance of being of the same genus, bears a splendid crimson corolla, reticulated with yellow lines.—As far as habit is concerned, we cannot but think this genus artificial; the crown of the stamens in *Stapelia*, and its nearest allies, being somewhat liable to aberration of character.

HUERS. See BALKERS and *Pilebird* FISHERY.

HUERS, the name given to certain fountains in Iceland, which form jets d'eau of scalding water 94 feet high and 30 feet in diameter. They arise from cylindrical tubes of unknown depth; near the surface they expand into apertures of a funnel-shape, and the mouths spread into a large extent of stalaçtical matter, formed of successive scaly concentric undulations. The occurrence of this phenomenon is foretold by noises roaring like the cataract of Niagara. These huers are not confined to the land; they also rise in the sea, and form scalding fountains amidst the waves.

HUESCA, a town of Spain, in the province of Aragon,

gon, situated on the Ifuela, the see of a bishop, suffragan of Saragossa, containing four parishes, five convents, and an university founded in 1354. In the seventh century, this town was the capital of a small Moorish kingdom; but in 1096 it was recovered by the Christians; 27 miles N.N.E. of Saragossa. N. lat. 42° 7'. W. long. 0° 27'.

HUESCAR, a town of Spain, in Granada, containing two parishes and four convents; seven miles W.N.W. of Carthagena.

HUET, PETER DANIEL, in *Biography*, a learned French prelate, was born at Caen in 1630. Owing to the death of his parents, his education devolved upon an aunt who placed him, while young, in the Jesuits' college at Caen, where he was distinguished by assiduity and an amiable disposition. He cultivated with much success not only polite literature, but mathematics, philosophy, jurisprudence, and the Hebrew language. In connection with the latter study, he cultivated the acquaintance of the learned Bochart, the Calvinist minister of Caen, but to avoid suspicion, their conferences were first held in secret. When he attained to the age of manhood he visited Paris, and began to indulge his passion for books, by purchasing as many as his finances would admit of. In 1652 he accompanied Bochart in a journey to Sweden, whither that learned man had been invited by queen Christina. He was tired of the country before the approach of winter; and leaving Bochart there, he returned through Holland, where he passed some time in visiting the universities and men of learning. On his arrival at Paris, a controversy arose between him and Bochart, concerning Origen's commentary on St. Matthew's gospel, which put an end to their friendship. In 1661, Huet published his first work, entitled "De Interpretatione," the object of which was to confine, within due limits, the licence of translators, especially those of the scriptures. He instituted, about this period, an academy of physics at Caen, the members of which assembled weekly at his house, where they read memoirs, and conducted experimental enquiries. This institution was patronized by the minister Colbert, through whose influence the royal munificence was extended, not only to the society, but also to its founder, and Huet was put on the list of learned men upon whom pensions were regularly conferred. In 1670, when Bossuet was appointed preceptor to the dauphin, Huet was called to the office of sub-preceptor. In this post, one of his employments was to superintend that edition of the classics which is commonly known here as the Delphin edition. In 1674 he was elected a member of the French academy, in 1676 priests' orders, which he had hitherto deferred taking, were given him, and in 1678 he was presented to the abbey of Aunay in Normandy, a place, the beauties of which he has celebrated in verse, and which became his favourite residence. He was presented, in 1685, to the bishopric of Soissons, but owing to the disputes then existing between France and Rome, he never obtained his bulls, nor took possession of his see, and which he readily exchanged in 1689 for that of Avranches, which was his native province. To this see he was not consecrated till 1692, and in 1699 finding the burthen of the situation too great for his comfort, he begged permission to resign his bishopric, and was presented by the king, as a pecuniary compensation, with the abbacy of Fontenai near Caen. Here he became the victim of several law suits, and at length made his retreat from the world and its vexations into the house of the Jesuits at Paris, to which he bequeathed his library. Here he remained absorbed in his studies, and in intercourse with a few learned men, till his death in January 1721, at the great age

of ninety-one. Huet was the author of many learned works, and may be regarded as one of the most distinguished literary scholars of the age in which he flourished. Of his various publications the following have been translated into English. "On the Origin of Romances;" "On the Situation of the Terrestrial Paradise;" "History of the Commerce and Navigation of the Ancients;" and "On the Weakness of the Human Understanding." Moreri.

HUETA, in *Geography*. See GUETA.

HUF, a town of European Turkey, in Moldavia, on the Pruth; 50 miles S.S.E. of Jassi. N. lat. 46° 34'. E. long. 46° 19'.

HUG, or *Cornish* HUG, a term used in wrestling, when one has an adversary on his breast, and holds him fast there.

HUGH, in *Biography*, abbot of Flavigny, who flourished in the beginning of the twelfth century, celebrated for his talents as an ecclesiastical historian, descended from an illustrious family, was born in the year 1065. He embraced the monastic life in the abbey of St. Vannes at Verdun, but when the members of that community were dispersed, he, together with the other monks, took refuge at the monastery of Flavigny, in the diocese of Autun. Here he acquired so much esteem and respect, that, upon the death of the abbot, in 1097, he was elected to that dignity, though he was not more than thirty-two years of age. He was author of "Chronicon Verdunense," which is divided into two parts, the first contains an ecclesiastical history from the birth of Christ to the close of the tenth century, and the second a continuation of the same from 1002 to 1102. This second part furnishes us with much valuable information concerning the ecclesiastical affairs of France in the eleventh century. It was drawn out of obscurity by father Labbè, who calls it an inestimable treasure, and printed it in the first volume of his "Bibliotheca nova Manuscriptorum," from a supposed autograph of the author, found in the Jesuits' college at Paris. Moreri.

HUGH of Fleury, a learned French monk, who flourished about the year 1120, and embraced the ecclesiastical life in the abbey of Fleury. He was author of "Chronicon Libris VI. ad Ivonem Carnotensem," commencing with the reign of Ninus, king of the Assyrians, and terminating with the death of the emperor Lewis the Pious, in the year 840; and also of a short, but well digested chronicle, from the beginning of the world to the reign of Lewis the Pious. Hugh was author likewise of "Lib. II. de regia Potestate, et sacerdotali Dignitate, ad Henricum Angliæ Regem," which is thought by some critics to be the most valuable of his works. Moreri.

HUGH of St. Victor, was born near Ypres, in Flanders, about the year 1097. When he was eighteen years of age, he entered into the congregation of the canons regular of St. Augustine, at the monastery of St. Victor, in Paris, where he spent the remainder of his life, and rose to the office of prior. In 1130 he was appointed to the theological chair, which he filled with so much reputation, that he was commonly called a "second Augustine." He died in 1140, when only in the 44th year of his age. His works were collected and published in three volumes folio. They have been several times reprinted.

HUGH of St. Charus, or St. Theodoric, a French monk, and cardinal in the thirteenth century, was born in the vicinity of Vienne, in Dauphine. In 1225 he entered into the Dominical order of preaching friars, of which he was soon appointed provincial. He was afterwards created doctor by the faculty of the Sorbonne, and was sent by pope Gregory

gory IX. on a mission to Constantinople, to attempt to bring about an union between the eastern and western churches. In 1245 he was created a cardinal by pope Innocent IV. under the title of St. Sabina, who also employed him in many important and difficult negotiations. He died at Orvieto in the year 1263. He was author of many very useful works, but the most celebrated is the "Concordance of the Bible," of which he was the inventor, and in drawing up which, he employed many monks of his order. This work was printed at Cologne in 1684, and is entitled "Concordantia major Latinorum Bibliorum pro omnibus vocibus declinabilibus in tota S. scriptura repertis." Moreri.

HUGH Capet. See CAPET.

HUGHES, JOHN, in *Biography*, an English poet, was born, in 1677, at Marlborough. He was educated in London, was a student in the academy of Mr. Thomas Rowe, and was a contemporary of Dr. Watts, Mr. Say, and some others who arrived at eminence. Mr. Hughes attached himself to polite literature, and was a practitioner in the fine arts. He obtained a place in the office of ordnance, and was secretary to various commissions, for purchasing lands for the use of the Royal docks. His employments under government, and his political principles, induced him to exercise his poetic talents upon public topics. He published "A Poem on the Treaty of Ryfwick;" "The Court of Neptune;" "A Poem on the Return of King William from Holland;" and a pindaric ode, entitled "Of the House of Nassau." His sentiments and poetry rendered him acceptable to the Whig party, and connected him with Addison, Steele, and other persons of distinction. He became one of the writers in the *Tatler*, *Spectator*, and *Guardian*. His taste for music introduced him to the acquaintance of several eminent composers, and led him to write many pieces for musical accompaniment. In 1715 he published, by subscription, an edition of Spencer, by which he gained great credit as an elegant critic. In 1717 he obtained the patronage of lord chancellor Cowper, who gave him the place of secretary to the commissions of the peace. His want of health interrupted the enjoyment of his good fortune. Under much bodily languor he composed his tragedy of "The Siege of Damascus," which was brought on the stage in February 17th, 1719-20, on which night the author finished his earthly career, at the age of forty-three. He was a man generally beloved and respected: his temper was amiable, his morals were pure, and his integrity was unimpeachable. His tragedy is the principal piece of his composition. In 1735 a complete collection of his poems and dramatic pieces was published with an account of his life in two volumes, 12mo. by his brother-in-law, William Duncombe, esq. The younger brother, Jabez Hughes, published a translation from Claudian of the Rape of Proserpine: and the story of Sextus and Erictho from Lucan; also Suetonius's Lives of the Cæsars, and some of Cervantes novels. Another John Hughes, fellow of St. John's college, Cambridge, published, in 1712, an edition of Chrysoptom on the Priesthood.

Mr. John Hughes, during the early part of the last century, was our principal lyric poet; and not only wrote for music, but was himself a performer in Britain, the small-coal man's concerts. He wrote the English opera of "Calypso and Telemachus," for Galliard to set, and "Apollo and Daphne," for Dr. Pepusch, with cantatas for both. His verses on Mrs. Barber's elopement, and on the rivalry of Margarita and Mrs. Tofts, shew that he interested himself in the transactions of the musical world, and was on the watch to ridicule the follies and display the talents of its professors.

HUGHESBURG, in *Geography*, a town of America, in Northumberland county, Pennsylvania, called also "Ca- Vol. XVIII.

tawessly," situated at the mouth of Catawessly creek; 25 miles N.E. of Sunbury. It contains 1315 inhabitants. N. lat. 40° 54'.

HUGH-TOWN, a town of St. Mary's, one of the Scilly islands.

HUGO, CHARLES LOUIS, in *Biography*, a French writer, abbot of Estival, and bishop of Ptolemais, died in 1735. His chief works are, "Annales Premonstratensium," which is a curious history of the monastic order. "Vie de St. Norbert, Fondateur des Premontres;" "Sacrae Antiquitates monumenta historica, dogmatica, diplomatica," 2 vols. fol. "Traité Historique et Critique de la Maison de Lorraine." This last, on account of the freedom with which crowned heads are treated in it, was published under the borrowed name of Baleicourt, and pretendedly printed at Berlia. Moreri.

HUGONIA, in *Botany*, so named by Linnæus in honour of Dr. Augustus John Hugo, physician to his British majesty at Hanover, the friend of Haller, and the companion of some of his botanical expeditions among the Alps. He graduated at Leyden in 1711, and published a thesis *de variis plantarum methodis*.—Linn. Gen. 349. Schreb. 457. Willd. Sp. Pl. v. 3. 694, Mart. Mill. Dict. v. 2. Juss. 275. Lamarck. Illustr. t. 572. Cavan. Diss. 177. Gærtn. t. 58.—Class and order, *Monadelphica Decandria*. Nat. Ord. *Malvaceæ*, Juss.

Gen. Ch. Cal. Perianth inferior, of five ovate, acute, concave, coriaceous, permanent leaves; the two outer ones largest. Cor. Petals five, roundish, large, spreading, emarginate, contracted at the base into a thin claw, attached to the cup formed by the stamens. Stam. Filaments ten, awl-shaped, equal, shorter than the corolla, united by their base into a little cup; anthers roundish, furrowed, incumbent. Pist. Germen superior, roundish; styles five, thread-shaped, longer than the stamens; stigmas capitate, orbicular, flat. Peric. Drupa globose, of one cell. Seed. Nut globose, deeply striated, of ten cells; kernels oblong, compressed, curved at the back.

Obs. "The two outer leaves of the calyx are entirely downy on their outside. The middle one is likewise downy, except a part of it covered by one of the former, where it is smooth and shining, like the two innermost, which are downy at their points only. Five of the filaments are a little shorter than the rest. Five of the kernels seem often to be abortive; hence perhaps it happened that Cavanilles took the nut to have but five cells. In that which I opened there were more than five kernels." Schreber.

Ess. Ch. Calyx simple, of five permanent leaves; two of them external. Petals five. Styles five. Drupa with a furrowed nut of about ten cells.

1. H. *Myrtax*. Linn. Sp. Pl. 944. Lamarck. Dict. v. 3. 149. Willd. n. 1. (Modera-canni; Rheede. Malab. v. 2. 29. t. 19.)—Spines opposite, revolute. Leaves obovate, smooth, entire.—Native of the East Indies, in sandy ground. A slender shrub, about 12 feet high, with numerous, short, leafy, not quite opposite branches, each of which bears, about its middle, a pair of remarkable strong, revolute, smooth spines. The resemblance of these to a pair of mustaches, is said to be expressed in the Indian name *Modera*, as in the Latin one *Myrtax*. Leaves numerous, scattered, from one to two inches long, obovate, entire, rather pointed, finely veiny, smooth on both sides. Footstalks short, broad and downy. Stipulas awl-shaped, downy. Flowers numerous, on axillary, simple, silky stalks, about the ends of the branches. Petals yellow, striated. Fruit shining, near half an inch in diameter.—The wood is said to be of a reddish brown, with a grateful aromatic odour. The root is esteemed

useful as a topical application to inflamed or swelled parts, and even in the bite of the hooded serpent, *Coluber Naja*. It is also given internally for febrile disorders in children, for the colic, worms, &c. The fruit has a red tasteless pulp.

2. *H. ferrata*. Lamarck. Dict. v. 3. 149. Willd. n. 2. (H. Mylax; Cavan. Diff. 177. t. 73. f. 1.)—Spines opposite, revolute. Leaves elliptic-lanceolate, ferrated, smooth, with glandular hairs at the origin of the veins.—Gathered by Commerçon in the island of Mauritius. Cavanilles mistook it for the former, from which it is very distinct. The leaves are larger, more acute, and strongly ferrated, furnished at the origin of their veins with tufts of hair as in the *Laurustinus*. The young leaves only are very silky. *Floer-stalks* somewhat corymbose. This is the species drawn in Lamarck's t. 572, after Cavanilles.

3. *H. tomentosa*. Cavan. Diff. 178. t. 73. f. 2. Willd. n. 3. Lamarck. Dict. v. 3. 150.—Leaves elliptic-oblong, ferrated, downy on both sides. Stipulas ovate.—Gathered by Commerçon in the isle of Mauritius, with the last, from which it seems sufficiently distinct in having broader, rather obovate, downy leaves.

HUGUENOTS, an appellation given by way of contempt to the reformed or protestant Calvinists of France.

The name had its first rise in 1560; but authors are not agreed as to the origin and occasion of it: but one of the two following seems to be the least forced derivation.

One of the gates of the city of Tours is called the gate Fourgon, by corruption from *feu Hugon*, i. e. the late Hugon. This Hugon was once count of Tours, according to Eginhardus, in his life of Charles the Great, and to some other historians. He was it seems a very wicked man, who by his fierce and cruel temper made himself dreadful; so that after his death he was supposed to walk about in the night time, beating all those he met with: this tradition the judicious Thuanus has not scrupled to mention in his history. Davila and other historians pretend that the nickname of Huguenots was first given to the French protestants, because they used to meet in the night time in subterraneous vaults near this gate of Hugon; and what seems to countenance this opinion is, that they were first called by the name of Huguenots at this city of Tours.

Others assign a more illustrious origin to that name; and say that the leaguers gave it to the reformed, because they were for keeping the crown upon the head of the royal line descended from Hugh Capet; whereas they were for giving it to the house of Guise, as descended from Charles the Great.

Others again derive it from a French and faulty pronunciation of the German word *eidgnossen*, signifying *confederates*, and originally applied to that valiant part of the city of Geneva, which entered into an alliance with the Swiss cantons, in order to maintain their liberties against the tyrannical attempts of Charles III. duke of Savoy.

These confederates were called *Eignots*, whence *Huguenots*.

The persecution which they underwent has scarce its parallel in the history of religion: though they obtained a peace from Henry III. in 1576, it was only of short continuance. This peace was the source of that civil war, in which the ambitious and powerful house of Guise, instigated by the sanguinary suggestions of the Roman pontiffs, aimed at nothing less than the extirpation of the royal family, and the utter ruin of the Protestant religion; while the Huguenots, on the other hand, headed by leaders of the most heroic valour and the most illustrious rank, combated for their religion and for their sovereigns with various success. These dreadful commotions, in which both the contending parties

committed such deeds as cannot be remembered without horror, were, at length, calmed by the fortitude and prudence of Henry IV. This monarch, indeed, sacrificed the dictates of conscience to the suggestions of policy; and imagining, that his government could have no stable or lasting foundation, as long as he persisted in disowning the authority and jurisdiction of Rome, he renounced the reformed religion, and made a solemn and public profession of popery. Perceiving, however, on the other hand, that it was not possible either to extirpate or suppress entirely the Protestant religion, he granted to its professors, by the famous edict of *Nantes*, (which see,) in the year 1598, the liberty of serving God according to their consciences, and a full security for the enjoyment of their civil rights and privileges, without persecution or molestation from any quarter whatever. The sufferings of the Huguenots were afterwards renewed, when every method which artifice or perfidy could invent had been practised in vain against the Protestants under the reign of Lewis XIV. The bishops and Jesuits, whose counsels influenced the cabinet of this prince, judged it necessary to extirpate, by fire and sword, this resolute people; and thus to ruin, as it were by one mortal blow, the cause of the reformation in France. Their insidious arguments and importunate sollicitations had such an effect upon the weak and credulous mind of Lewis, that, in the year 1685, trampling upon the most solemn obligations, and regardless of all laws, human and divine, he revoked the edict of Nantes, and thus deprived the Protestants of the liberty of serving God according to their consciences. This revocation was accompanied, indeed, with the applause of Rome; but it excited the indignation even of many Roman Catholics, whose bigotry had not effaced or suspended, on this occasion, their natural sentiments of generosity and justice. It was moreover followed by a measure still more tyrannical and shocking; even an express order, addressed to all the reformed churches, to embrace the Romish faith. The consequences of this cruel and unrighteous proceeding were highly detrimental to the true interests and the real prosperity of the French nation, by the prodigious emigrations it occasioned among the Protestants, who fought, in various parts of Europe, that religious liberty, and that humane treatment, which their mother country had so cruelly refused them. Those among them, whom the vigilance of their enemies guarded so closely as to prevent their flight, were exposed to the brutal rage of an unrelenting soldiery, and were assailed by every barbarous form of persecution that could be adopted to subdue their courage, exhaust their patience, and thus engage them to a feigned and external profession of popery, which in their consciences they beheld with the utmost aversion and disgust. In other countries, and particularly in our own, they found an asylum, and communicated in return for the protection they experienced the benefit of their skill and industry. Mo-sheim's Eccl. Hist. vol. v.

HUIDE, in *Geography*, a town of Norway, in the diocese of Christianland; 20 miles E. of Skeen.

HUIDINGS, a small island in the North sea, near the west coast of Norway. N. lat. 59° 3'. E. long. 5° 42'.

HVILGRUND, and **HVILGRUNDET**, two small islands on the west side of the gulf of Bothnia: the first in N. lat. 60° 47'. E. long. 17° 11'; the second in N. lat. 60° 36'. E. long. 17° 27'.

HUIS, L', a town of France, in the department of the Ain, and chief place of a canton, in the district of Belley; 6 miles W. of Belley. The place contains 1123, and the canton 6465 inhabitants, on a territory of 175 kilometres, in 13 communes.

HUISSEN, a walled town of Germany, in the duchy of Cleves; 10 miles N.N.W. of Cleves.

HUISSIER, a French name for an usher, serjeant, or beadle.

HUITAN, in *Geography*, a town of Sweden, in West Bothnia; 20 miles N. of Lulea.

HUITINGO POLLACHIUS, in *Ichthyology*. See **GADUS Pollachius**.

HVITTISBURG, in *Geography*, a town of Sweden, in the government of Abo; 12 miles N. of Biorneborg.

HUJUS, or **HUJUSCE DIET**, in *Mythology*, a furnace given by the Romans to Fortune. She had a temple at Rome, erected by Q. Catullus.

HULDIBARRY, in *Geography*, a town of Bengal; 48 miles N.E. of Purneah.

HULDIPOOKRA, a town of Bengal; 46 miles S. of Jauldoe.

HULDOOA, a town of Hindoostan, in the circar of Dooab; 50 miles N.W. of Pattiairy.

HULDSCHIN, or **HOLTSCHEIN**, a town of Silesia, in the principality of Oppau; 11 miles E. of Troppau. N. lat. $49^{\circ} 48'$. E. long. $18^{\circ} 12'$.

HULET PANIAS, a lake of Palestine, anciently called lake "Merom," into which runs a river of the same name, anciently denominated the "Dan."

HULIN ROCKS, otherwise called *the Maids*, rocks in the North channel of the Irish sea, always above water, which lie about 6 miles N.E. from Lough Larne, on the coast of Antrim. N. lat. $54^{\circ} 57'$. W. long. $5^{\circ} 37'$.

HULKs are large vessels, having their gun-decks from a hundred and thirteen to a hundred and fifty feet long, and from thirty-one to forty feet broad, and fitted with an apparatus, in order to fix or take out the masts of his majesty's ships, as occasion requires. They will carry from four hundred to a thousand tons.

Anciently, the word *bulka* seems to have signified a small vessel.

HULK is also a name bestowed on any old vessel laid by, as unfit for farther service. It is probably derived from the *ολκας*, or vessels of burthen of the ancient Grecians.

HULL, or **KINGSTON-UPON-HULL**, in *Geography*, a borough, market-town, and sea-port in the East Riding of the county of York, England, is situated on the western side of the river Hull, and the northern bank of the river Humber, at the distance of about 25 miles from the mouth of the latter; nine miles S. of Beverley; 173 N. of London; and 38 S.E. of York. It extends nearly two miles in length, in a direct line, in which extent is included the adjoining parish of Sculcoates; and to rather more than half that distance in a parallel direction towards Beverley. The town originated in the year 1296, under the immediate patronage of king Edward I., who, on his triumphant return from Scotland, projected the foundation of a port, &c. at this place, then a small hamlet, called Wyke, and put his design immediately into execution. Peculiar privileges were granted to builders and residents, together with a royal charter, vesting the government in a warden and the body of freemen; and the new-formed town was distinguished by the appellation of Kingston, or Kingstown-upon-Hull. Edward founded a house of White friars, and caused a hall to be built for his own residence. This was probably given to the De la Poles, for soon afterwards a magnificent manor-house was erected by that wealthy family, which was frequently honoured with the royal presence, and falling to the crown by the attainder of Edmund de la Pole, earl of Suffolk,

in 1508, became for some time the residence of king Henry VIII.

So rapid was the progress of the place, that, in about sixty years from its foundation, it was called upon to furnish king Edward III. with 16 ships and 466 men. In Leland's time it was a fair and well built town; and, according to Camden, it possessed stately edifices, strong fortresses, ships well equipped, a number of merchants, and abundance of all kinds of wealth; having been favoured with not less than sixteen charters from various successive monarchs. It was first fortified under a charter from king Edward II., and the walls repaired and strengthened with towers of brick in the time of king Richard II. by sir Michael de la Pole, who appears to have revived in this place the art of brick-making, which had fallen into disuse since the time of the Romans. King Henry VIII. built two block-houses and a citadel on the east bank of the river Hull, at an expense of 23,000*l.*, although he drew great part of the materials from the dissolved houses of Black and White friars, and the church of St. Mary. King Charles II., in 1681, laid out a vast sum in improving the fortifications, which had suffered considerably from the severe siege of the town by the earl of Newcastle, and during the civil wars in the preceding reign. Within the last 35 years, the whole of these ancient works of defence, with the gates of the town, have been demolished, except two of the fortresses built by Henry, which, being guarded by several batteries and modern erections, are now converted into magazines, capable of containing more than 20,000 stand of arms, and ordnance stores for twelve or fifteen sail of the line, defended by a regular garrison.

Hull consists of three principal divisions, formed by the intervention of the docks, which, occupying the greater part of the space where the walls formerly stood, nearly insulate the old town. That on the north side of the old dock is in the parish of Sculcoates; all its buildings have been erected within the last thirty years, and form several spacious and handsome streets. A neat hall has been built for the administration of justice, &c. this part of the town being in the county of York, and not under the jurisdiction of the magistrates of Hull. The other division has arisen still more recently, and lies to the west of the Humber dock, occupying the situation of the ancient hamlets of Wyke and Myton; by which latter name it is now distinguished, and is included in the county of the town of Hull. A suburb also has lately sprung up, on the Holderness side of the river, in the parishes of Drypool and Sutton, encompassing the garrison, and connected with the town by a bridge of four stone arches, rebuilt in 1787, with a draw-bridge in the centre, which has this year (1811) been renewed on a very ingenious and novel construction, and is wide enough to admit the largest vessels that have occasion to pass through it. The whole town stands on a level tract of ground, within a short distance of the Yorkshire wolds; the principal streets are broad and well paved, and in lighting and watching it is not inferior to any place in the kingdom. A few years ago, it was computed that about 200 houses were built annually, but since the interruption to the Baltic trade, the principal source of revenue to this port, that number has been much diminished.

The edifices for religious worship belonging to the establishment are two parish churches, that of the Holy Trinity and St. Mary's; with a chapel of ease, and the chapels of the Trinity-house and Charter-house. The church of the Holy Trinity, a noble structure, was first erected in the reign of king Edward II.; the tower and west end were added about the time of king Henry VII., by whose successor, Hull

was made the fee of a suffragan bishop, who possessed a stately palace in the High-street, long since destroyed. The church, however, remained under that of the neighbouring village of Hefle, until separated by an act of parliament in 1661. St. Mary's was formerly a much larger structure, and belonged to the priory of Ferriby. Great part of it, including the steeple, was pulled down by king Henry VIII. as obstructing the view from his palace. St. John's is a chapel of ease to the Holy Trinity, and was finished in 1792 at the sole expence of the Rev. Thomas Dikes, LL.B. the present incumbent. There are also various meeting-houses for the peculiar doctrines and worship of all the prevailing sects.

The charitable institutions in Hull are numerous. The most ancient and splendid is that of the Trinity-house, founded by subscription in 1369, and rebuilt in 1753: its funds have been progressively augmented by legacies and benefactions. It was incorporated by letters patent in the reign of Henry VI.; and its charters and grants have, at various subsequent periods, been renewed and extended. The fund is considerably increased by a monthly contribution of sixpence from every seaman sailing from this port; when superannuated, or disabled, they obtain relief, as do also their widows and children, from this charity. Several distinguished characters have been admitted to the freedom of this corporation, which is governed by wardens, brethren, and assistants. In a marine-school, connected with it, thirty-six boys are, for three years, clothed and educated for the sea service; the guild also provides North sea pilots for the royal navy, when required by government. The Charter-house hospital is worthy of particular notice; it was founded, together with an adjoining priory, by Michael de la Pole, for the support of a certain number of pensioners, denominated brothers and sisters; under the superintendance of a master, who enjoys a salary of 100*l.* per ann., with a house and garden. Several other smaller hospitals, for similar purposes, are distinguished by the names of the respective founders, viz. Lister's, Gregg's, Crowle's, Watson's, (bishop of St. David's,) Gee's, Harrison's, Ratcliff's, and Weaver hospitals. The workhouse is a large building, commonly known by the name of Charity hall. For the relief of the indigent sick and maimed, a general infirmary was erected, in 1782, by voluntary contributions, on a plan superior to most establishments of the kind, which has been the means of restoring to health near 9000 persons. Here are likewise a free grammar-school, founded by Alcock, bishop of Ely, in 1486, which enjoyed considerable reputation, especially under its late master the Rev. Jos. Milner, A.M.; the Vicar's-school, established by the Rev. W. Mason, father of the poet of that name; a school for girls, and a valuable institution for putting out poor boys apprentices, endowed by Ald. Coggan, and another for orphans, endowed by Ald. Ferris. Two handsome buildings have also been recently erected, capable of containing 500 boys, and 250 girls, who are instructed with great success, according to the improved system of education. The chief part of the expence, as also that of several Sunday-schools and other charities, is defrayed by voluntary subscriptions.

Besides the various buildings already noticed, there are the custom-house, intended originally as an exchange also, but having been long disused for that purpose, the present comfortable room, with a news-room over it, was designed and executed in 1794, by and at the expence of an individual, though with a view to his ultimate advantage; the assembly rooms, not now adequate to the wants and opulence of the town; the gaol; the Neptune hotel; the Rodney and

Minerva lodges of Free-masons, the former of which is a most elegant and handsome room; the subscription library, founded in 1775, and built in 1800, a great advantage to the inhabitants, and containing many thousand volumes; and the theatre royal, rebuilt in 1809, a spacious and convenient structure, the interior of which is fitted up in a superior style of comfort and elegance. The avenue from the market-place to the Humber was lately widened, by taking down the guild hall, a mean brick building, and on its site shambles were erected, which, for convenience, elegance, and ventilation, may challenge comparison with any in the kingdom. The old shambles being likewise removed, the beautiful east end of Trinity church is again thrown open to the market-place, in the centre of which stands an equestrian statue of king William III. erected in 1734. Until a new guild hall shall be provided, the corporation transact business in a large house fitted up for the purpose. Among the public accommodations enjoyed by the inhabitants, may be reckoned the Barton-boats, which cross the Humber every tide, to and from Barton, a distance of about seven miles.

The commerce of Hull will be best appreciated by a statement of the annual exports and imports for a few years. The tonnage of this port was, several years ago, inferior only to that of London, Liverpool, and Bristol; its customs only to those of the former two. It sends at present nearly thrice as many ships to the whale fisheries as London, and, exclusive of the latter port, more than all Great Britain besides. Its facilities of communication with the interior, by means of the Ouse and Trent, and the canals communicating with them are very great. The gross amount of the customs was

| | |
|---------|-----------|
| | £. |
| In 1802 | - 438,459 |
| — 1803 | - 379,675 |
| — 1804 | - 287,210 |
| — 1805 | - 386,070 |
| — 1806 | - 374,907 |
| — 1807 | - 340,825 |
| — 1808 | - 198,487 |
| — 1809 | - 276,811 |
| — 1810 | - 311,780 |

The number of ships (British and foreign) that entered inwards, and cleared outwards, from and to foreign parts, also of coasting-vessels, was,

| | With Cargoes. | | In Ballast. | | Coasting Vessels. | |
|------|---------------|-----------|-------------|-----------|-------------------|-----------|
| | Inwards. | Outwards. | Inwards. | Outwards. | Inwards. | Outwards. |
| 1804 | 728 | 279 | 51 | 380 | 1560 | 1547 |
| 1805 | 658 | 232 | 47 | 327 | 1626 | 1602 |
| 1806 | 513 | 226 | 29 | 272 | 1576 | 1636 |
| 1807 | 525 | 158 | 9 | 335 | 1484 | 1614 |
| 1808 | 207 | 67 | 109 | 135 | 1557 | 1733 |
| 1809 | 473 | 256 | 55 | 223 | 1806 | 1938 |
| 1810 | 622 | 193 | 30 | 427 | 1786 | 2033 |

The dock was undertaken, according to act of parliament, in 1774, and completed within four years; the entrance is immediately from the river Hull; it extends in length about 600 yards; in width 85; and is 23 feet deep; is capable of containing 100 sail of square rigged vessels; and, with the wharfs and quay, occupies a space of more than thirteen acres; containing in the dock 48,188 square yards, in the quay 17,479; exceeding in capacity the largest in Liverpool, and now only surpassed by those of London: when made it was the largest in the kingdom. The subscribers to the dock are incorporated by the title of "The Dock Company at Kingston-upon-Hull." The original number of shares

was

was 120, but the trade of the port requiring further accommodation, two other acts of parliament were obtained in 1802 and 1805, by which the company was empowered to increase them to 180, the money arising from which, amounting to 82,390*l.*, was appropriated to the making of a new dock, which was completed under the title of the Humber dock, in 1809, at an expense of 220,000*l.* It opens into the Humber by a lock of excellent workmanship, large enough to admit a fifty-gun ship, crossed by an iron bridge in two parts, of very ingenious mechanism. The area of the dock and quays is ten acres, with a basin of four acres; its length 300 yards, width 114, and depth 29 feet; and it is intended to communicate with the old dock at some future time, which, when effected, will wholly insulate the old town. The company is entitled to certain duties on all ships entering the port; the profit divided on the shares was,

| | £. | s. | d. | £. | s. | d. | |
|---------|--------|----|----|----|----|----|------------|
| In 1805 | 14,733 | 15 | 0 | 98 | 4 | 6 | per share. |
| — 1806 | 8,901 | 15 | 0 | 49 | 9 | 1 | — |
| — 1807 | 8,290 | 10 | 0 | 46 | 1 | 2 | — |
| — 1808 | 4,941 | 15 | 0 | 27 | 9 | 1 | — |
| — 1809 | 7,872 | 15 | 0 | 43 | 14 | 9 | — |
| — 1810 | 10,306 | 10 | 0 | 57 | 5 | 2 | — |

The manufactures of Hull are various and extensive; one of the principal branches is that of expressing and refining oil from linseed, and preparing the residue for feeding cattle: the process is chiefly effected by mills worked by the wind. The largest and finest mills in the kingdom of this kind, both for the above purpose and for grinding corn, are to be found in great numbers near this town; their machinery is excellent, and many of them are from 80 to upwards of 100 feet in height. An iron-foundry, two large sugar-houses, an extensive soap, and several white lead manufactories, Greenland yards, numerous dry-docks, shipbuilders' yards, and ropewalks, where a great number of hands are constantly employed; and several large breweries are amongst the most important, but do not comprize half the manufactories now existing in the town.

The entire civil authority over the town, and the several places within what is denominated the county of the town of Kingston-upon-Hull, a district of more than eighteen miles in circumference, west of it, is, by various royal charters, particularly those of king Henry VI. and king Charles II., vested in the corporation, which now consists of the mayor, the recorder, twelve aldermen, the sheriff, two chamberlains, a town clerk, a water-bailiff, and other officers, besides a high steward, who is generally some nobleman of rank. The mayor is admiral of the Humber, and possessed of the power of life and death over criminals within his jurisdiction. The judges of assize visited this town, but of late years this has been discontinued, and all trials are removed to York, though causing a great additional expense to those concerned.

Hull returns two representatives to parliament: the right of election of whom, as well as of the several principal members of the corporate body, except the recorder and high steward, is vested solely in the burgesses or freemen of the town, an important body, amounting to upwards of 2000. The population returns to parliament in 1801, specified, that the town and county contained 4767 houses, occupied by 29,516 persons, of whom 13,051 were males, and 16,465 females: this does not include the adjoining populous parish of Sculcoates, nor the suburb on the east of the river Hull. A fair is held annually in October, and the markets are abundantly supplied, especially when the tide suits the Lincolnshire farmers to cross the Humber, on Tuesdays, Fridays, and Saturdays.

Hull has, at different times, given birth to men distinguished on various accounts. In the first rank must be placed her representative in parliament, that incorruptible patriot, Andrew Marvell, whose father was lecturer of Trinity church; and, in later times, a most worthy man and excellent poet, the Rev. W. Mason, A.M. son of the late vicar of the same. It likewise gave the titles of earl and duke, both now extinct, to the family of Pierrepont.

The village of Sculcoates, though not in the county, may justly be considered as forming a part of the town of Hull; a portion of the old dock is included within it. The church, situated towards the northern extremity of the parish, is a neat uniform structure, rebuilt in the year 1760, and contains some fragments brought from the neighbouring abbey of Meaux.

HULL River, in the East Riding of Yorkshire, is a small river, which falls into the Humber at the town of Kingston-upon-Hull, better known by the name of *Hull* only, and as being the fourth sea-port in point of importance in the British dominions. The Hull is made navigable from the Humber, about twelve miles, to Aike-beck mouth, the entrance of the Driffeld navigation. See CANAL.

HULL and Leven Canal, is an inland navigation in Yorkshire, East Riding, made in pursuance of acts of parliament obtained in 1801 and 1805; it extends about three miles from the Hull river up to the town of Leven. See CANAL.

HULL, the Indian *Nantasket*, a town of America, in Suffolk county, Massachusetts, containing about 21 houses, and 117 inhabitants. It is a peninsula 8 miles long, 9 miles E. of Boston, on the S. side of the harbour.

HULL, Little, a small island in the East Indian sea, near the W. coast of the island of Poggy. S. lat. 2° 45'. E. long. 99° 32'.

HULL of a ship is her main body, without any masts, yards, sails, or rigging.

To HULL, or *lie a HULL*, is understood of a ship, when, either in a dead calm, or in a storm, she cannot carry all her sails, but they are taken in to preserve them; so that nothing but her masts, yards, and rigging are abroad, and her helm tied down to the lee side of the ship. In this state she will lie easily under the sea, if she be a good failer, and make her way one point before the beam.

To strike a HULL, is to lie closely or obscurely in the sea in a storm, or to tarry for some consort, bearing no sail, with the helm lashed a-lee.

To HULL a ship, is to fire cannon-balls into her hull, within the point-blank range.

HULL, in *Agriculture*, a term made use of to signify the chaff, or husk of grain.

HULLEAH, in *Geography*, a town of Hindoostan, in Benares; 20 miles S. of Merzapour.

HULLOCK of a Sail, at *Sea*, is when, in a great storm, some small part of a sail is cut and let loose. It is chiefly used in the mizen-sail, to keep the ship's head to the sea; then all the rest of the sail is made up, except a little at the mizen yard-arm. Also, when a ship will not *weather-coyle*, to lay her head the other way, they loose a hullock of her fore-sails, and then changing the helm to the weather-side, she is made to fall off, and to lay her head where her stern lay.

HULLUAH, in *Geography*, a town of Hindoostan, in Guzerat; 15 miles N. of Champaneer.

HULME, NATHANIEL, M.D. in *Biography*, was born at Halifax, in Yorkshire, in the year 1732, and was bred to the profession of a surgeon-apothecary. He afterwards served in the capacity of surgeon in the navy, and being stationed

nationed at Leith after the peace of 1763, he embraced the favourable opportunity of prosecuting his medical studies at Edinburgh, where he took his degree of doctor in the year 1765. His inaugural thesis was entitled "Dissertatio Medica Inauguralis de Scorbuto." Soon after his graduation, he settled in London as a physician, intending to devote his attention particularly to the practice of midwifery. This, however, he soon relinquished; and, on the establishment of the General Dispensary (the first institution of the kind in London), he was appointed its first physician. He was also some time physician to the city of London Lying-in-hospital. About the year 1775, he was, through the influence of lord Sandwich, then first lord of the admiralty, elected physician to the Charter-house. His other official situations he resigned many years before his death, and withdrew himself at the same time in a great measure from the active exercise of his profession; but the last he retained during the remainder of his life. In April, 1807, he was bruised by a fall, which he survived but a fortnight, being at the age of seventy-five.

Dr. Hulme was the author of several dissertations; viz. a republication of his thesis, with additions, 1768. "A Treatise on Puerperal Fever," 1772. An oration "De Re Medica cognoscenda et promovenda," delivered at the anniversary of the medical society in 1777, to which a small tract was annexed, entitled "Via tuta et jucunda Calculum solvendi in Vesica urinaria inherentem." An enlarged edition of this tract, in English, appeared in the following year, under the title of "A safe and easy Remedy for the Relief of the Stone and Gravel, the Scurvy, Gout, &c.; and for the Destruction of Worms in the Human Body; illustrated by Cases: together with an extemporaneous Method of impregnating Water and other Liquids with fixed Air, by simple Mixture only, &c." 1778. In 1800, Dr. Hulme instituted a series of experiments "on the light spontaneously emitted from various bodies," an account of which was published in the Philosophical Transactions of that and the following year. Dr. Hulme was also one of the editors of the "London Practice of Physic." See *Transf. of the Med. Society of London*, vol. i. part 1, 1810.

HULPE, LE, in *Geography*, a town of France, in the department of the Dyle, and chief place of a canton, in the district of Brussels; 8 miles S.E. of Brussels. The place contains 897, and the canton 9244 inhabitants, on a territory of 115 kilometres, in 11 communes.

HULST, a town of France (formerly of Flanders), in the department of the Scheldt, and chief place of a canton, in the district of L'Escluse; 16 miles N.N.E. of Ghent. The place contains 1714, and the canton 11,381 inhabitants, on a territory of 205 kilometres, in 8 communes. It was formerly the capital of four offices, with twelve dependant villages; it is situated on a canal that communicates with the Scheldt, and is very strong, by its fortifications and position among the marshes. N. lat. 51° 14'. E. long. 3° 55'.

HULTSIO, a town of Sweden, in the province of Smaland; 26 miles N. of Wexio.

HULVER, in *Rural Economy*, a name by which the holly-tree is frequently known in some districts.

HULWAD, in *Geography*, a town of Hindoostan, in Guzerat; 55 miles N.E. of Wurwan.

HUMAGUACA, a town of South America, in the province of Tucuman; 65 miles N. of St. Salvador de Jugui.

HUMAN, a town of Persia, in the province of Segestan; 180 miles S.E. of Zareng.—Also, a town of Russian Poland, in the palatinate of Braclau; 50 miles E.S.E. of Braclau. N. lat. 48° 42'. E. long. 30° 8'.

HUMAN, something that relates to man, or the nature of man. See NATURE.

Epicurus and his followers deny that the gods concern themselves with human affairs. See EPICUREANS.

Faith is distinguished into divine and human. See FAITH.

HUMAN Figure, *The*, in *Painting and Sculpture*. Amidst all the various beauties with which this earth abounds, and which attract the eyes and call forth the emulation of the artist, nothing is so astonishing and so engaging as the structure of the human form, and the elegance and variety of the actions of which it is capable. It has been the subject of panegyric in all ages. The naturalist, the moralist, the philosopher, and the divine, have dwelt, with holy reverence to its Maker, on its delicacy, its simplicity, yet variety of conformation, and on its intellectual and spiritual endowments; all of which are most justly combined in description, in the admired contemplative speech our own Shakspeare has put into the mouth of Hamlet. "What a piece of work is man! how noble in reason! how infinite in faculties! in form and moving how express and admirable! in action, how like an angel! in apprehension how like a god! the beauty of the world! the paragon of animals!"

To the painter and sculptor no object in nature is so interesting as the human figure; none requires more study and attention to enable them justly to display its various beauties of action and expression; and a long continued series of observation and practice will alone qualify them for the fulfilment of so arduous a task.

The sources of this difficulty are, the very great latitude of its motions, and the numerous combinations of them, added to the various possibilities of view, and of light and shade. Its beauty is indeed very great, independent of all these, but they serve to enhance its value and render delight to the artist, while they call for his utmost exertions in his endeavours to represent them. So much has already been said under the various articles BEAUTY, CONTOUR, COMPOSITION, DRAWING, EXPRESSION, FACE, &c. that it will only be necessary in this place to treat of the proportions of the human figure, the range of its powers of action, its varieties, and the most beautiful and just combinations of them.

It has long been acknowledged, among artists, that the sculptures of the Greeks, from the time of Pericles to that of Alexander the Great, afford the best examples of beautiful and characteristic proportion; and from them a scale has been drawn out, which, if it will not serve for every purpose, will always be of use, as well to depart from, as to follow. It is, in either case, a line to guide us, and should never be lost sight of. We shall transcribe the following one from the note given by sir Joshua Reynolds on ver. 144 of Mason's *Fresnoy*:

"Learn then from Greece, ye youths! proportion's law,
Informed by her, each just position draw."

"Du Piles has, in his note on this passage, given the measures of a human body, as taken by Fresnoy, from the statues of the ancients, which are here transcribed.

"The ancients have commonly allowed eight heads to their figures, though some of them have but seven; but we ordinarily divide the figure into ten faces (this depends on the age and quality of the persons: the Apollo and Venus de Medicis have more than ten faces); that is to say, from the crown of the head to the sole of the foot, in the following manner:

"From the crown of the head to the forehead is the third part of a face.

"The face begins at the root of the lowest hairs that grow on the forehead, and ends at the bottom of the chin.

"The

HUMAN FIGURE.

“ The face is divided into three proportional parts ; the first contains the forehead, the second the nose, and the third the mouth and chin ; from the chin to the pit between the collar bones is two length of a nose.

“ From the pit, between the collar bones to the bottom of the breast, one face.

“ From the bottom of the breasts to the navel, one face. The Apollo has a nose more.

“ From the navel to the genitories, one face. The Apollo has half a nose more, and the upper half of the Venus is to the lower part of the belly, and not to the privities.

“ From the genitories to the upper part of the knee, two faces.

“ The knee contains half a face.

“ From the lower part of the knee to the ankle, two faces.

“ From the ankle to the sole of the foot, half a face.

“ A man, when his arms are stretched out, is, from the longest finger of his right hand to the longest of his left, as broad as he is long.

“ From one side of the breasts to the other, two faces.

“ The bone of the arm, called humerus, is the length of two faces, from the shoulder to the elbow.

“ From the end of the elbow, to the root of the little finger, the bone called cubitus, with part of the hand, contains two faces.

“ From the box of the shoulder-blade, to the pit betwixt the collar bones, one face.

“ If you would be satisfied in the measures of breadth from the extremity of one finger to the other, so that this breadth should be equal to the length of the body, you must observe that the boxes of the elbows with the humerus, and of the humerus with the shoulder-blade, bear the proportions of a face when the arms are stretched out.

“ The sole of the foot is in length the sixth part of the figure.

“ The hand is the length of a face.

“ The thumb contains a nose.

“ The inside of the arm, from the place where the muscle disappears, which makes the breast, (called the pectoral muscle,) to the middle of the arm, four noses.

“ From the middle of the arm at the top, to the beginning of the head, five noses.

“ The longest toe is a nose long.

“ The two outermost parts of the teats and the pit between the collar-bone of a woman, make an equilateral triangle.

“ For the breadth of the limbs no precise measures can be given, because the measures themselves are changeable, according to the quality of the persons, and according to the movement of the muscles. Du Piles.

“ The measures of the ancient statues by Audran appear to be the most useful, as they are accompanied with the outline of the figures which are most distinguished for correctness.”

Audran, whose work sir Joshua Reynolds thus recommends, takes a different plan from that of Fresnoy, and is more minutely accurate. He divides the figure into heads, each head into four parts, and each part into twelve minutes ; which certainly has given with more accuracy the exact proportions of those figures he has measured ; but Fresnoy's is fully equal to the general purposes of art ; for where variety of character is requisite, it is evident that the same proportions would be an evil ; therefore the more general scheme is quite adequate as a guide in drawing the figure.

The knowledge of these proportions, and of the forms and positions of the bones and muscles, which compose the human figure, may be regarded as the foundation on which to pro-

ceed to the more difficult task of becoming duly acquainted with its powers and varieties of actions. A perfect knowledge of the shapes of the bones is more particularly requisite in this matter ; since by their projecting parts coming in contact with each other, a limit is put to the actions of the joints ; and they are secured from dislocation by the natural extension of the muscles ; and the muscles themselves directed and governed in their own actions.

Mr. A. Carlisle, professor of anatomy to the Royal Academy, in his able and useful lectures before that body, entered much at large upon this part of our subject, and in a very satisfactory manner demonstrated it on the skeleton and the living figure. To his kindness we are indebted for the following remarks, taken chiefly from angular measurements, and which will be found highly useful to all artists who apply their talents in the representation of the human figure.

“ The motions of the head and trunk of the body are limited by the several joints of the spine.

“ The motions of the whole body upon the lower limbs take place at the hip joints, at the knees, and at the ankles.

“ The great limbs, technically called the upper and lower extremities, have rotatory motions at their junctions with the trunk, by means of ball and socket joints at the shoulders and the hips.

“ The analogy of parts between the upper and the lower extremities is not carried throughout the structure of those limbs in the human body.

“ The fulcrum of the upper limb is itself moveable upon the trunk, as appears by the extensive motions of the scapula, which so generally accompany the rotations of the shoulder, and which supply that limb with a greater range of movements than is possessed by the lower limb.

“ The junction of the thigh, with the motionless mass of the pelvis, limits its rotation to its ball and socket joint.

“ The rotation of the head upon the neck takes place at the joint between the first and second vertebræ.

“ When the nose is parallel with the sternum, the face may be turned towards each shoulder, through an angle of 60 degrees on each side, or the whole range of this turning will extend through 120 degrees.

“ The lateral bending of the neck is divided equally between the junctions of the seven vertebræ ; but the bowing of the head, and the act of throwing the head violently backward, are principally effected, at the joint of the skull and the first bone of the vertebral column, called the atlas.

“ These last motions are consistent with an erect state of the neck, while the lateral motions demand a curvature of its whole mass.

“ The movements of the trunk are limited to the rotatory and lateral motions, which are almost equally divided among the several joints of the vertebræ of the back and loins.

“ The joints of the dorsal vertebræ are, however, more closely compacted than those of the loins, which allows of a wider range for turning and bending in the line of the loins, than in that of the back.

“ The ribs and the sternum move upward, so as to expand the width of the chest at the lower margin of the ribs, and to draw the clavicles and shoulders upward : this takes place at each full inspiration of the breathing, and the contrary state follows in the act of expiration. Such apparent movements are characteristic of certain passions and actions, and are always observable in the naked figure.

“ In stooping, to touch the ground, the thigh-bone forms

forms an angle of about 55 degrees with the average direction of the spine.

“ The leg bends upon the thigh, at an angle of 75°, and the line of the tibia forms with the sole of the foot, when that is elevated, an angle of 65 degrees.

“ The whole of this limb is capable of moving at the hip-joint forwards, to a right angle with its perpendicular position; and backwards, to an angle of about 20°. The leg will then continue to move by itself to its own angle of 75°, with the thigh. It has, besides this, a motion outwards to about 45°.

“ When the shoulders are at rest, the two clavicles usually meet in an angle of 110 degrees at the sternum.

“ The utmost elevation of the upper arm usually forms an angle of 155° with the spinal column, and about 125° with the line of its clavicle. The flexion of the fore arm upon the upper arm, is confined to an angle of nearly 40°.

“ The whole arm is capable of moving forward or outward, through nearly half a circle, and backward to an angle of 80°, with its perpendicular situation.

“ The actions of pronation and supination in the hand, range through 270°: but then 90° of the rotatory motion, in the act of pronation, are derived from the shoulder-joint.

“ The palm of the hand admits of flexion and extension through 65 degrees in each direction; its lateral motions are 35° outward, and 30° inward.—The flexion of the fingers at each phalanx is 90°, or a right angle.

“ These general rules govern the average and most natural actions of the living figure, but peculiar forms and acquired powers considerably change all such calculations; nevertheless it is expected in art that the knowledge of the true actions of the human figure should be derived from the general state of nature, and not from the distortions of the posture-master, or the acquired flexibility of the tumbler.”

In drawing the joints of the limbs, considerable difference will be found in their length, according to the degree of action they are in; thus the elbow joint, when bent inwards, lengthens the arm nearly $\frac{1}{4}$ th. The same occurs at the knees, and in the joints of the fingers; in the same manner as a hinge is extended when opened.

There is a very considerable difference noticeable between the joints of children before the age of 8 or 9, and those of grown persons. In the former they are small and surrounded by fat, which gives the appearance, when they are straight, of dimples in the surface; whereas, in men they are large, and always projecting; with nothing but strong tendons about them.

When the artist is fully acquainted with the proportions and capabilities of action in the human figure above-mentioned, and proceeds to represent it either in a tranquil position, or in motion, he will find it requisite to attend to the geometrical and mathematical principles on which it is constructed; and by which alone its acting powers, the muscles, are directed and governed. The due equipoise of its parts, either for its own support, or the compound admixture of the weight of other bodies, in lifting, pulling, pushing, &c. must be carefully regulated, or in vain will he attempt to effect his object. The following observations may be found useful on this subject.

When a man is entirely at rest, and standing equally on both feet, a line drawn perpendicularly from the pit between the clavicles will fall exactly in the midway between his feet.

If he moves, so as to stand upon one foot, it will fall upon the heel of that foot.

If he raises one arm, it will throw as much of his body on

the other side of the perpendicular, as is equal to the weight of, and is necessary to counterbalance, that arm.

If one of the legs is thrown back, the breast is brought forwards, so as equally to bring the centre of gravity of the whole frame always in the same relative situation to the parts, in every position in which the body can be thrown.

Thus the equipoise of the figure is of two sorts, simple and compound. Simple, when a man acts only by and upon himself; and compound, when any external weight be superadded; for that must be regarded in his actions, while suspending it, as a part of his own frame: and in order to lift or support it, he must throw as much of his own weight in a contrary direction on the central line, to that where the object is applied, as is equal to it; or it will overpower and draw him to the ground. Indeed it will be necessary, in lifting, to throw a larger proportion of weight or muscular force over, or it cannot be effected.

In action, the same principle governs the figure. Having, by the motion forwards of one part, in walking for instance, removed its centre of gravity, it endeavours, in the instant, to recover the balance lost, and brings up another to support itself; and these actions, going on progressively, carry it forwards. In running, a greater impetus is given; the breast is thrust farther forwards, and a quicker application of the support of the limbs is required; thus, the slower the motion, the nearer the support will be under the centre of gravity; and on the contrary, when the motion is quickened, the farther it will be removed from it.

When a man intends to strike a severe blow, he endeavours to add the weight of his body to the force of his arm, and to effect this he draws back himself over the perpendicular to a considerable distance, then, rushing forwards while he strikes, conveys his body as far on the contrary side.

Thus, the motions of the figure must be always regulated by its centre of gravity; the perpendicular of which is its centre of motion. The motion being created by the loss of equipoise, or inequality of weight, will, of course, be more or less violent, accordingly as a greater or less proportion of the body be removed from the perpendicular.

With regard to the muscular action of the figure, the plates of anatomy, and the descriptions given under that article, will sufficiently inform the reader. Each muscle has its individual or conjoint power and use. It is the artist's duty to select, in representation, those which more immediately are employed in, and characterize, an action; and not to make too great a display of anatomical knowledge, nor at all times, and in all the various actions of the human figure, represent the same muscles (when seen) with the same degrees of force, that is, equally tense; as if their power was requisite in every action; as is frequently the case among the imitators of M. Angelo. No matter how the man was employed, every muscle throughout the frame is rendered equally prominent; and the eye and the understanding bewildered, in endeavouring to comprehend which part was principally in motion. But more of this when we treat of *STYLE*, in *Design*; see that article.

HUMAN Fossil-remains, in *Natural History*. With early writers on natural history and geology, it was no uncommon thing to refer almost any large uncommon bones, which were met with in the earth, to giants of the human race. The pretended parts of a human skeleton by Scheuchzer, found in the slate-pit at Oningen, his anthropolith, protee, &c. are shewn in the *Annales du Museum*, vol. xiii. p. 411, to belong to a kind of salamander, and at page 198, the pretended human fossils of Cérigo are shewn to be devoid of that character. After all which has been said on the human bones
found

Found in the ossæous rock of Gibraltar (Jones, *Phys. Diss.* p. 428.), and other places in the Mediterranean and coast of Dalmatia, the fact of their having any of them belonged to the human race may fairly be doubted. The arm and skeleton of a man, mentioned by Mr. Charlton, in his *History of Whitby*, p. 355, as found in the alum shale, were probably no such thing. The tooth which Mr. Jones mentions may, if really human, have been taken from some church-yard, or ancient burial-place, whose waters were of a petrifying quality, as well as the woman's hand which he mentions, p. 427. If such was not a mere deception, owing to the external form, like the pretended leg and foot of a child in black flint, which we have seen, that was taken out of a chalk-pit. The human tongue, or glossopetra of Pliny, and the human thigh of stone mentioned by Parkinson, (*Org. Rem.* p. 16 and 21.), and the two bones of a man's foot in iron-stone, which Dr. Grew mentions (*Rarities*, p. 332.), were probably all deceptions of a similar kind; and to one or other of these classes, *viz.* 1st, mistaken animal remains; or, 2d, deceptive forms of mineral nodules, may, perhaps, all the supposed human relics, found imbedded in the strata, be referred. A 3d class of human remains may be admitted with less hesitation, *viz.* bones found intermixed with works of art, and with circumstances attending modern alluvial deposits or soils, like the human ribs found along with a boat, under a stony or concreted gravelly stratum, near Petersburg (Kirwan's *Geo. Ess.* p. 442.); the skeletons found with beads, rings, armour, coins, &c. mentioned by Mr. Whitehurst (*Inquiry* 1st ed. p. 15.); and by many other writers, but which clearly did not belong to the stratified remains. A 4th class of human reliquia are found preserved in peat-bogs, some instances of which are said to occur in the peat-pits near Newbury (*Phil. Trans.* vol. i. p. 109.); a woman preserved in a moss, at Axholm, in Lincolnshire, and a man in a moss in Shetland (Jameson's *Shetland Isle*, p. 158.), and various similar instances, which are to be met with. Mr. William Martin, in combating the arguments formerly adduced to shew that the supposed human, animal, and vegetable remains of the strata were deposited at the Noachian deluge, or by parts of its waters left in inland lakes and seas, observes (*Outlines*, p. 30.), "According to sacred history, the full development of the animal kingdom, as well as the vegetable, had taken place, long before the period in which they were equally involved in one general inundation. And hence, in strata supposed to have been formed by depositions from water left by the deluge, not only might we reasonably expect to find vegetable and marine relics, but also the remains of *land animals*, of quadrupeds for instance, and even of *man* himself. For, however small a proportion the destroyed land animals bore among the general multitude of organic bodies overwhelmed by this catastrophe, as they *did* exist, and as the bones of quadrupeds are certainly as liable to subsidence in water as drifted timber or other vegetable matter, they no doubt would occasionally be met with in the strata in question, if such strata had really originated from the cause assigned in the hypothesis. But, on the contrary, it is an indubitable fact, that neither the remains of man nor of quadrupeds have ever been found in stones or earths constituting strata productive of genuine mineral coal, nor indeed as integrant parts of *any strata*, excepting those which are decidedly of much later formation, such as we are now treating of. To a far remoter period, therefore, than the flood, must we recur, in any endeavour to explain or illustrate the agency of nature, in collecting and depositing the minerals of regular disposed strata."

HUMANA DE TOMPIERES, in *Geography*, a town of New Mexico; 63 miles S.S.E. of Santa Fé.

HUMANITY, the nature of man, or that which denominates him human.

Nestorius would not allow the infirmities of humanity to be attributed to the Deity; nor the attributes of the Deity to humanity. See NESTORIANS.

HUMANITIES is used, plurally, for the *humaniores literæ*, *i. e.* the study of the Greek and Latin tongues, grammar, rhetoric, poetry, and the ancient poets, orators, and historians.

HUMAR, in *Geography*, a small island in the Red sea, near the coast of Arabia; three miles N.W. of Loheia.

HUMARES, a town of New Navarre; 120 miles S. of Casa Grande.

HUMAS, an Indian village on the W. side of Mississippi river, in Louisiana, 60 miles above New Orleans. The Humas were formerly a considerable nation, but were reduced, about the year 1770, to about 25 warriors. The Alabamas, whose villages are near those of the Humas, had at the same period about 30 warriors. The Chetemachas have about 27 warriors.

HUMAXAR, a town of South America, in the government of Tucuman, on the river Dolce; 60 miles S. of St. Jago del Efero.

HUMATION, HUMATIO. The most ancient way of disposing of the dead was by humation, or interment. Pitif. See BURIAL.

HUMBER, in *Geography*, a river of England, or rather a large estuary, formed by several considerable rivers, and especially by the Ouse and Trent, and flowing into the German ocean, N. lat. 58° 30'. E. long. 1° 15'. Besides the Trent, which enters the Humber after a direct course of about 100 miles, and which is navigable to Burton, in Staffordshire, and the Ouse, which runs by York, and is navigable to Rippon, the other principal rivers that issue into the Humber are the Dun, which runs by Doncaster; the Aire, navigable to Leeds; and the Calder, navigable to Halifax; the Warf, navigable to Tadcaster; the Derwent, navigable to New Malton; and the Hull. See CANAL.

HUMBER, a river of Upper Canada, in the E. riding of the county of York, which discharges itself into lake Ontario, eastward of the old fort Toronto.—Also, a river of Newfoundland island, which runs into the gulf of St. Lawrence, through the bay of Islands.

HUMBERSTONE, a township of Upper Canada, in the county of Lincoln, lying between Bertie and Wainfleet, and fronting lake Erie.

HUMBERT, in *Biography*, a cardinal in the 11th century; a native of Lorrain, embraced the monastic life in the diocese of Toul, in the year 1015. Here he acquired so high a reputation for talents and learning, that pope Leo IX. sent for him into Italy, where he promoted him to the bishopric of the White Forest. In 1049 he was raised to the purple by the same pope, who sent him his legate to Constantinople, to attempt to restore the ancient union between the eastern and western churches. In 1059, by the order of pope Nicholas II. he drew up the confession of faith for the famous Berenger to sign, in which he laid down the monstrous doctrine, that "the bread and wine, after consecration, were not only a sacrament, but the real body and blood of Jesus Christ; and that this body and blood were actually handled by the priests, and consumed by the faithful, in reality and truth as other sensible objects are." Cardinal Humbert died after the year 1069. His works are numerous and chiefly theological. Moreri.

HUMBLE-BEE, in the *History of Insects*. See **BOMBYLIUS**.

HUMBLE-bee, *Bastard*. See **FAUX bourdon**.

HUMBLE-bee Flies, in *Natural History*, the name of a class of flies of different sizes, but all agreeing in the great resemblance they bear to the humble-bees, of the smaller or middle-sized species. These might, at first sight, very naturally pass for real humble-bees; but a closer examination will shew them not to be such, as they have not the trunk of the humble-bee, and have only two wings. The species of the humble-bee fly are many of them of absolutely different genera one from another, some of them having trunks, and others having a distinguishable mouth. See **CULEX**.

If the figure of these flies, in their winged state, attracts our curiosity and attention, their prior state, that of the fly-worm, of most of them ought surely much more to do so. The place nature has assigned the worms of these flies for their habitation is, indeed, a most strange one; there is no other place for them to live in under this form, to begin their destined growth, and be fitted for their transformations, but in the intestines of horses, or under the thick and firm skin of oxen. In the latter case, the worm hatched from the egg of its parent fly, deposited there, makes the tumour in the places which alone furnishes it with food and habitation, and in the middle of which it has a place to breathe. See **HIPPOBOSCA**.

It is not an invariable law of nature, however, that all the worms of the humble-bee flies are to feed on animal substances; for we find some delighted with vegetable food, and particularly one which loves none but the bulbous roots of flowers. Reaumur's *Hist. Inf.* vol. iv. p. 497, &c.

HUMBLE-Plants, in *Gardening*. See **MIMOSA**.

HUMBLED, in *Rural Economy*, a term that is frequently applied to neat cattle and sheep, in order to denote their being hornless.

HUMBOLDTIA, in *Botany*, so named by Vahl, who had first denominated it *Batschia*, in honour of the celebrated traveller and botanist Von Humboldt. "Vahl. *Symb. fasc.* 3. 106." Willd. *Sp. Pl.* v. 1. 1147.—Class and order, *Pentandria Monogynia*. Nat. Ord. *Lomentaceæ*, Linn. *Leguminosæ*, Juss.

Ess. Ch. Calyx in four deep segments. Petals five. Legume oblong, compressed.

1. *H. laurifolia*. (*Batschia laurifolia*; Vahl. *Symb. fasc.* 3. 39. t. 56.)—Native of Ceylon. A tree with jointed, zigzag, hollow branches. Leaves abruptly pinnate, of four or five pair of stalked, ovate-oblong, pointed, entire leaflets. *Stipular* double; the outer ones horizontal, half arrow-shaped; the inner ovate, pointed, erect, much the largest. *Clusters* of many flowers, axillary, solitary, or in pairs. *Willdenow*.

HUME, DAVID, in *Biography*, an eminent historian, was born at Edinburgh in 1711. He was the youngest son of a man of good family, who died while David was in his infancy, so that his education was entrusted to his mother. He displayed, at a very early period, a great love for literature, which became his predominant passion. His patrimony was too slender to permit him to follow his inclinations without some view to profit, and he attempted to gain some commercial employment at Bristol. In a few months he found that kind of business totally unsuitable to his genius, and went to France with the intention of prosecuting his literary pursuits in a country retreat, resolving to supply by economy his pecuniary deficiencies. He resided first at Rheims, but chiefly in Anjou, and passed three years very agreeably in that kingdom. In 1737 he came to London, and in the end

of the following year published his "Treatise on Human Nature," which he had composed during his residence in France. Mr. Hume's ardent passion for literary fame received a severe mortification from the neglect attending his first publication, which "fell dead-born from the press, without reaching such distinction as even to excite a murmur among the zealots." He did not despair, but proceeded in his studies, and in 1742 printed his "Essays, Moral, Political, and Literary." These were so favourably received as to make the author amend for his former disappointment. In 1745 he received an invitation from the young marquis of Annandale to come and live with him in England. This connection lasted but a single year, when he stood forward as candidate for the professorship of moral philosophy in the university of Edinburgh, and was powerfully supported by persons of consideration and high rank. He was, however, unsuccessful. General St. Clair, in 1746, nominated him his secretary in an expedition designed for Canada, but which ended in an attack upon the French coast. In 1747 he attended the general, in the same station, upon a military embassy to the courts of Vienna and Turin. On his return, he re-published his piece on human nature, with alterations, under the title of "An Enquiry concerning the Human Understanding." It was scarcely more successful in this form than it had been before, but his other works were beginning to attract notice, and make their way rapidly. In 1752 he published his "Political Discourses," which were received with immediate approbation. In the same year his "Enquiry concerning the Principles of Morals" was published, which he considered as the best of all his writings, but which met with little notice. He obtained, in 1752, the appointment of librarian to the Faculty of Advocates in Edinburgh, which afforded him the command of a large and curious collection of books. It was this circumstance which seems to have inspired him with the idea of becoming an historical writer, as it was probably his local situation which suggested to him, as his first subject, the "History of England under the House of Stuart." The first volume, containing the reigns of James I. and Charles I. appeared in 1754, which was furiously assailed from all quarters, on account, as he thought, of what he had said in defence of the earl of Strafford; but it was probably owing to his undisguised contempt for all religions, of which he recognizes but two species, superstition and enthusiasm. This work was so completely neglected as well as derided, that, had not a war broken out between England and France, he would probably have retired to some provincial town of the latter kingdom, have changed his name, and for ever renounced his country. The second volume of his history, comprising the period from the death of Charles I. to the Revolution, appeared in 1756, and was received much better than the first had been. With this encouragement he published his history of the house of Tudor in the year 1759, which excited against him a renewed portion of rancour. His reputation as an historian continued to gain ground, so that he was induced to go back to the earlier periods, and write down to the point at which his last work had commenced. These two additional volumes appeared in 1761, and his history of England thenceforth became a standard book, read by all, at home and abroad, who wished to take a compendious and interesting view of the English affairs. The researches of Mr. Hume into the origin of the constitution are not remarkable for depth or accuracy; and he seems too ready to admit the idea that the liberties of the country are of modern date, and were so many forced concessions from the

sovereigns. In his history of the Tudors and Stuarts there seems a manifest design of exaggerating the despotism of the former, in order to lighten, by comparison, the usurpations and high pretensions of the latter. His style is clear, lively, sometimes eloquent, always agreeable, though not unfrequently careless and incorrect. The money which Mr. Hume obtained for the copy-right of his history, joined to a considerable pension granted him by the crown as a literary man, had now secured him an independence, with which he intended to retire to his native country, but in 1763 he received an invitation from the earl of Hertford to attend him on an embassy to Paris. This he accepted; and his character as a writer and philosopher being well known in that capital, procured him an excess of attention and civility, with which he was highly delighted. He remained at Paris as "Chargé d'affaires," after the departure of lord Hertford in 1765, and did not return to England till 1766, when he brought with him the celebrated Rousseau, who, having excited persecutions against himself in every country near him, was induced to seek for an asylum in the only true land of liberty. Mr. Hume's conduct towards his friend was extremely kind and generous; but so capricious was the temper of Rousseau, that he fancied all the world was leagued against him, and betrayed such groundless and unworthy suspicions as finally dissolved their friendship. In 1767 Mr. Hume accepted the office of under-secretary of state, which he held under general Conway till the resignation of that minister in 1769. He then retired to Edinburgh, expecting to enjoy a comfortable old age by means of the friends, the reputation, and opulence which he possessed. In that northern metropolis he drew around him a chosen circle of suitable associates, with whom he lived upon easy and very familiar terms. He died in 1776. The account which he has given of his last illness is as follows: "In spring, 1775, I was struck with a disorder in my bowels, which at first gave me no alarm, but has since, as I apprehend it, become mortal and incurable. I now reckon upon a speedy dissolution. I have suffered very little pain from my disorder; and what is more strange, have, notwithstanding the great decline of my person, never suffered a moment's abatement of my spirits, inasmuch that were I to name a period of my life which I should most chuse to pass over again, I might be tempted to point to this later period. I possess the same ardour as ever in study, and the same gaiety in company. I consider, besides, that a man of 65, by dying, cuts off only a few years of infirmities; and though I see many symptoms of my literary reputation's breaking out at last with additional lustre, I knew that I could have but few years to enjoy it. It is difficult to be more detached from life than I am at present." The account of his own life, of which the foregoing is an extract, was dated the 18th of April 1776, and he gradually grew worse till August the 25th, when he died, in the 65th year of his age. His character has been drawn by Dr. Adam Smith: "He was one," says he, "concerning whose philosophical opinions men will, no doubt, judge variously, every one approving or condemning them according as they happen to coincide or disagree with his own, but concerning whose character and conduct there can scarcely be a different opinion. His temper indeed seemed to be more happily balanced, if I may be allowed such an expression, than that perhaps of any other man I have ever known. Even in the lowest state of his fortune, his great and necessary frugality never hindered him from exercising, upon proper occasions, acts both of charity and generosity. It was a frugality, founded not upon avarice, but upon the love of independence. Upon the whole, I have always considered him, both in his life-time and

since his death, as approaching as nearly to the idea of a perfectly wise and virtuous man as perhaps the nature of human frailty will permit." To this picture, drawn by the pen of friendship, we may add the observations of a very judicious biographer. "We may," says he, "reasonably demur to Dr. Smith's moral estimate, in attributing the perfection of virtue to a man whose leading principle was, by his own confession, selfish (the acquisition of literary fame), and who never seems to have made any of those sacrifices of interest and inclination to public good, in which virtuous action chiefly consists. Further, whatever degree of freedom of discussion may be justifiable, with the benefit of mankind in view, it may be doubted whether a mere fondness for speculation, or a love of philosophical applause, will morally excuse a writer for sporting with opinions which are commonly held of the highest importance to human welfare." Two of his posthumous works were published after the death of Mr. Hume, viz. "Dialogues concerning Natural Religion;" and "Essays on Suicide." The latter contain some of his most obnoxious principles, conveyed in the most offensive form. See Hume's account of his own life, and Dr. Smith's letter prefixed to the 8vo. edition of the History of England 1789. Gen. Biog.

HUMEA, in *Botany*, so named, by the writer of the present article, in just commemoration of the late right hon. lady Amelia Hume, sister of the present earl of Bridgewater, and wife of sir Abraham Hume, bart. who first raised this plant in England, and communicated it to him. Her ladyship for many years cultivated successfully, and studied scientifically, a fine collection of plants; at her seat at Wormleybury, Herts, and was always distinguished by the liberality with which she imparted to others her acquisitions or discoveries. She departed this life, admired and beloved by all who knew her, in September, 1809, and is interred at Wormley.—Sm. Exot. Bot. v. 1. 1. (Calomeria; Venten. Jard. de la Malmaison. 73.)—Class and order, *Syngenesia Polygamia-equalis*. Nat. Ord. *Compositæ Discoidææ*, Linn. *Corymbifera*, Juss.

Gen. Ch. *Common Calyx* of numerous, imbricated, obovate, obtuse, concave, coloured, pointless scales, the outer ones smallest and gradually more distant. *Cor.* compound, uniform, tubular, of very few florets, whose proper corolla has a cylindrical tube, and a bell-shaped limb, with five revolute segments. *Stam.* Filaments five, capillary; anthers united into a pentagon, with five sharp teeth. *Pist.* Germen oblong, glandular; style cloven; stigmas spreading, capitate. *Peric.* none, except the permanent scarious calyx. *Seed* oblong, without any crown or wing. *Recept.* very small, glandular.

Eff. Ch. Receptacle minute, glandular. Down none. Calyx loosely imbricated, membranous, pointless. Florets about three. Anthers awned.

1. *H. elegans*. Sm. Exot. Bot. t. 1. (Calomeria amarantoides; Venten. Jard. de la Malmaison. t. 73.)—Native of New South Wales, not far from Port Jackson, from whence we received specimens amongst the first plants sent from that country in 1791.

The *root* is biennial. *Stem* herbaceous, five or six feet high, erect, panicled, round, filled with spongy pith, and rough (like the leaves) with short rigid viscid pubescence. *Leaves* alternate, sessile, lanceolate, acute, from six to twelve inches long, slightly waved at their edges, and clasping the stem by their heart-shaped base, of a full green colour on both sides, and furnished with a midrib, with copious reticulated veins; the upper leaves gradually diminish into bractæas of a small lanceolate figure. *Panicle* drooping and widely spreading, of innumerable small pendulous flowers,

on capillary branched stalks. The florets are tipped with violet; the calyx is of a more or less deep rose-colour, crimson, or brownish red, sometimes white. The whole plant is fragrant, like red cedar wood, or the hautboy strawberry, but too strong to be agreeable if much handled. It is raised on a hotbed, and planted out for flowering.

The name *Calomeria* is a pun upon the word *Buonaparte*, from *καλος*, fair or good, and *μερις*, a part, and is, in every respect but its harmony, truly insufferable, especially as there is a plant already called, somewhere or other, *Buonapartea*; there is also a *Napoleona* and a *Josephinia* for those who desire them; the last being certainly well merited, and perhaps the least exceptionable of all.

HUMECTATION, formed of *humor*, moisture, moistening, in *Pharmacy*, the preparing of a medicine, by steeping it awhile in water, in order to soften and moisten it when too dry; or to cleanse it, or prevent its subtle parts from being dissipated in grinding, or the like.

HUMECTATION is also used for the application of moistening remedies.

HUMERALIS, in *Anatomy*, a name frequently given to the artery and vein of the arm.

HUMERUS, or **HUMEROS**, the bone of the upper arm. See **EXTREMITIES**.

HUMERUS, *Fracture of the*. See **FRACTURE**.

HUMERUS, *Luxation of the*. See **LUXATION**.

HUMERUS of Birds. See *Anatomy of BIRDS*.

HUMFRE, in *Geography*, a cape on the E. coast of the island of Guernsey.

HUMID, **HUMIDUM**, *moist*. The school philosophers make water the *primum humidum*, the first of humid bodies, and the cause or principle of humidity in others; which are more or less moist, as they partake more or less of this element.

HUMIDITY, **MOISTURE**; the quality or power of wetting or moistening other bodies.

Modern writers consider humidity as a particular species of fluidity; and define it a fluid, which, being applied on a solid body, adheres to, and communicates the quality to other bodies. Others, somewhat more accurately, call humidity the power whereby a body moistens another; but what that power is they do not shew.

But of this we are certain, humidity is only a sort of relative mode. So far as the component particles of a fluid, compared with respect to the pores and particles of other bodies, or the texture thereof, are apt and disposed to enter those pores, or stick to those particles, so far is that fluid humid: on the contrary, so far as there is a repugnance or incongruity between the particles, &c. in respect of such bodies, the fluid is not humid.

Thus quicksilver is not moist in respect to our hands or clothes, and other things, which it will not stick to; but it may be called humid, in reference to gold, tin, or lead, to whose surfaces it will presently adhere, and render them soft and moist. Even water itself, which wets almost every thing, and is the great standard of moisture and humidity, is not capable of wetting all things; for it stands or runs off in globular drops from the leaves of cabbages, and many other plants; and it will not wet the feathers of ducks, swans, and other water-fowl.

Add, that the texture alone may cause the fluid to be humid, as is plain, in that neither quicksilver, lead, nor bismuth alone will stick upon glass; yet being mixed together, they will form a mass that will do so; as appears from such a composition being frequently used in foliating looking-glasses. See **COHESION**, **FLUID**, and **HYGROMETER**.

HUMIDUM RADICALE, or *Radical Moisture*, in the pathology of the ancient philosophers, a supposed principle in the animal economy, which, together with the *radical heat*, was essential to life, or constituted the vital energy. The principle being altogether gratuitous, different notions were formed concerning it by different writers; and some confessed that they did not understand what was meant by these terms. See Sennert. lib. i. cap. 5. De Calido innato et Humido radicale. Fernel, lib. vi. cap. 4. entitled "Humidi primigenii, quod tum caloris tum spiritus subjecta est materia, demonstratio."

HUMILIATI, a congregation of religious in the church of Rome, established by some Milanese gentlemen on their release from prison, where they had been confined under the emperor Conrad, or, as others say, under Frederick I. in the year 1162. This order, which acquired great wealth, and had no less than ninety monasteries, was abolished by pope Pius V. in 1570, and their houses given to the Dominicans and Cordeliers, for their luxury and cruelty.

HUMILIATION, the act of humbling, i. e. of abating a person's pride, and bringing him lower in his opinion.

In this sense, humiliation stands distinguished from mortification: humiliation brings down the mind; mortification subdues the flesh.

HUMILIS MUSCULUS, in *Anatomy*, a name mentioned by Caserius, as given by some people of his time to one of the muscles of the eye, the rectus inferior of Fabricius, and depressor of Riolan: it is the depressor oculi of Albinus, being one of the quatuor recti musculi oculorum of that author. See **EYE**.

HUMILITY, in *Ethics*, is a virtue consisting in the moderate value which a person puts upon himself, and every thing relating to him. Or, more particularly, it consists in not attributing to ourselves any excellence or good which we have not; in not over-rating any thing which we have or do; in not taking an immoderate delight in one's self; in not assuming more of the praise of a quality or action than belongs to us, and in a lowly sense and acknowledgment of our imperfections, errors, and sins. This virtue expresses itself in the modesty of our appearance, of our pursuits, and of our behaviour towards other men. It is distinguished from affectation, bashfulness, and meanness.

HUMISUGA, the *Ground-sucker*, in *Natural History*, the name of a fly, so called, because it is supposed to live by sucking the juices of the earth, without taking in any solid food. It has a brownish or dun body; a white spot at the insertion of the wings, and another at the head; the legs are black; the back is grey, with four sullied white lines running longitudinally; the wings are silvery, and, if put into water, they shine with a bright light like that of the glow-worm. This creature is common with us about path-ways, on mole-hills, and in other places where the ground is newly turned up. We call it the *path-fly*.

HUMMEL'S TOWN, in *Geography*, a thriving town of America, in Dauphine county, Pennsylvania, containing a German Lutheran church, and about 90 houses, on the S. side of Swetara creek; 100 miles W.N.W. of Philadelphia.

HUMMET, **THE**, a small island in the English Channel, near the N.E. coast of the island of Guernsey.

HUMMING-BIRD, in *Ornithology*. See **TROCHILUS**.

HUMMOCK, in *Geography*, a small island in the East Indian sea; 15 miles S. of Mindanao. N. lat. 5° 24'. E. long. 126° 37'.

HUMMOCK Point, a cape on the N. coast of the island of Celebes, so called by captain Carteret in 1767, who supposed

posed it to be the same with that which is also called "Stroomen Point." N. lat. $1^{\circ} 20'$. E. long. $121^{\circ} 39'$.

HUMMOCK, in *Geology*, is a term introduced by Dr. William Richardson (Phil. Transf. 1808.) to denote an important class of isolated *Hills* (see that article), and patches of strata, which are composed of piles of strata, known in the neighbourhood, but entirely detached from the contiguous part of such strata, owing to the intervening strata having been carried away, or *abrupted*, as the doctor called it, a phenomenon which had been previously noticed and described by Mr. Farey, and called *Denudation*. (See that article in our work, and the Phil. Mag. vol. xxxiii. p. 258.) Dr. Richardson very aptly compares a hummock to one of those dead-men, buoys, &c. which labourers, employed to move ground by measure, leave in different parts of the space they have excavated, in order to mark the original height of the surface in that place. The following are the names of curious basaltic hummocks which Dr. Richardson has particularized in the north of Ireland; some of them being isolated, and higher knowls on the tops of hills and mountains, and others of them conical or grotesque knowls, in valleys or low tracts, which are equally the seats of hummocks in denudated districts; viz.

Altabrian, on the Derry mountains, hemispherical.

Clogher rock, near Bushmills, a small cone or knowl, stratified like the hummock of Dunmull.

Doland's hill hummocks, near Glennuller vale and Mayole vale.

Dunmull, 3 miles S.E. of Portrush, on a high ridge, cylindrical, like Fermayle and Clogher rock.

Fermayle, on the Derry mountains, cylindrical and flat at top, like Dunmull.

Knock Loughran, near Maghera.

Lisanoire, one mile E. of the town.

Magilligan, on the top of the mountain, irregular.

M'Art's Castle, on Cave-hill façade, irregular.

Sconce, on the Derry mountains, hemispherical.

Slemish, 23 miles S.E. of Portrush, on the ridge, very large; with a flat top.

Mr. Farey has given an ample list and account of the hummocks in and near Derbyshire, in the 1st vol. of his "Report to the Board of Agriculture," to which we must refer. The curious hummocks of sand-stone at Andernach, in Bohemia, and others near Tunis, resembling ruins, also at Namaquas, in Southern Africa, and on the banks of the Wolga, are noticed in our article FLETZ, where they are supposed, but not perhaps on sufficient ground, to be peculiar to a particular rock, or stratum, instead of occurrences peculiar to the strata of certain districts, however various, as in Derbyshire they appear to be.

The *partial tract* of William Martin, (Outlines, addenda, p. iii.) "under which the strata constituting the surrounding tract are observed to dip," includes our hummocks on the tops of hills, or isolated knowls in valleys or plains, whose nearly horizontal strata basset or shew their edges on all sides, and also the *Basin* or SWILLEYS (see that article) of coal and other strata, which are often met with, dipping towards a central point or line, and basset or rising to the surface round the circumference of such swilleys: of the latter character, some of the depressed hummocks of the Derbyshire Report partake, as Darley-flash, Goyte-mofs, and Shallerofs, of the second coal-shale; Combes-mofs of the first coal-shale; Wardlow-mines of the lime-stone shale; Peak Forest town of the third lime, &c. The accurate discrimination of tracts of strata, in conducting mineral surveys, seem of the utmost importance to the progress of geological science, as well as to the processes of the miner, collier, &c.

HUMMOCK, a term used by *Navigators* to express circular and elevated mounts, appearing at a distance.

HUMMUDNAGUR, a town of Hindoostan, in Bahar; 45 miles S.S.W. of Patna.

HUMOR, or HUMOUR. See HUMOUR.

HUMOR, in *Geology*, was introduced by M. de Luc, "Elementary Treatise on Geology," p. 55, and defined to mean water, not as a compound of hydrogen and oxygen, but as an elementary substance of the globe, distinct from the forms of water, ice, (or crystallized water,) or steam: supposing, says he, that "in its primitive state, when nothing of what we now observe upon the earth was produced, nor as yet disposed to be produced, this substance (humor) was neither water, nor ice, nor agua: its elementary particles were intermixed with all those to which they are at present united by affinity, in the different bodies with which we are acquainted; and those particles, then acquiring liquidity by their union with fire, and thus immediately entering into all the associations, to which its numerous affinities gave birth among elementary substances, produced the *Primordial Liquids*; which see.

HUMORAL PATHOLOGY, that pathology, or doctrine of the nature of disease, which attributes all morbid phenomena to the disordered condition of the fluids, or *humours*, of the body, and attempts to explain the progress and changes of diseases by certain fermentative or digestive operations in the *humours*.

In many of our articles in *medicine* we have had occasion to allude to the *humoral pathology* as the foundation of many opinions and peculiar modes of practice, which a more accurate pathology has confuted and exploded. It would be a fruitless labour to enter into a minute detail of all the absurd speculations respecting the morbid changes in the fluids of the body, which have been successively adopted, from the time of Galen downwards: for, not only the followers of Galen, but all those in modern times who have dissented from his opinions, and have transferred the doctrines of chemistry and of mechanics to the phenomena of the living body, have, nevertheless, admitted the changes of the fluids into their systems, as the principal causes of disease, and as the foundation for explaining the operation of medicines: nay, even after the peculiar property of living bodies, (the faculty of irritability, excitability, sensorial power, or nervous energy, as it has been variously denominated,) which is resident in the nervous system, came to be viewed as a principal agent in the production of disease, and in the restoration of health, according as it is influenced by morbid causes, or by salutary impressions; or when, as Hoffmann first maintained, (Medicin. Rational. System. tom. iii. § 1. chap. 4.) the affections of the living solids came to be admitted as the most probable grounds of disease, and as affording a more rational explanation of morbid phenomena, than the disordered conditions of the fluids; still a humoral pathology was received, and combined with these opinions, to a considerable extent. Dr. Cullen himself, who advanced far beyond Hoffmann in his appeal to the agency of the living solids, occasionally refers to certain supposed "acrimony of the fluids," as the essence of some diseases: and it was in the systems of Brown and Darwin that all consideration of the changes of the humours, as the origin of disease, was first rejected, and every morbid condition was referred to the agency of that power, the nervous energy, which distinguishes the living body from dead matter. (See EXCITABILITY and IRRITABILITY.) But the doctrines of the older physicians continue to be, in a great measure, the prevailing opinions of the vulgar, if not of the generality of unprofessional persons, and even of a great number of routinists in the profession.

We

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We shall, therefore, briefly state the principles of those doctrines, and shew the futility of the arguments on which they rest.

The four elementary humours of Hippocrates and Galen, namely, *pituita*, or phlegm, blood, bile, and black bile (melancholia), were received as the principles of all the animal fluids and solids, constituting by their due proportion the health of the body, and by their *intemperies*, or undue proportion, the varieties of disease, until the time of Paracelsus. This bold and conceited chemist, who set up for a reformer of all philosophy, renounced the system of Galen, denied the existence of the four humours, and contended that diseases were not produced by humours, but that humours originated from disease. At the same time he promulgated a system of his own, using a jargon which is not very intelligible, and to which it may be questioned whether either himself or his followers ever attached any clear ideas. He adopted the notion of three elementary substances, to which he applied the appellations of *salt*, *sulphur*, and *mercury*, with Basil, Valentine, and others; but these terms were employed in new acceptations, about which the chemists were not altogether agreed. They are to be considered, it would appear, as general expressions of some faculty or property, which they communicate. Thus mercury appears to represent the principle of fluidity, sulphur that of inflammability, and salt that of solidity. According to Severinus, one of the followers of Paracelsus, "*salt* gives consistency, solidity, or coagulation to things; *sulphur* imparts a fat oleaginous quality, which tempers the consistency of the salt; and *mercury* gives fluidity to both, and facilitates their mixture." And Quercetanus, another writer of that school, says that things receive their various tastes from *salt*, their odours from *sulphur*, and their colours from both these, but most chiefly from *mercury*. (See Sennert. Tract de Consensu et Dissensu Galenicorum et Peripatet. cum Chymicis. cap. 11.) They speak also of animal sulphur, vegetable sulphur, and mineral sulphur; of animal salt, vegetable salt, &c.; so that it is obvious these were merely gratuitous and hypothetical expressions, which every one might use according to his own fancy, and which led to every species of absurdity. When they treat of the origin of diseases, this absurdity is manifest throughout. Paracelsus lays down two genera of disease, one of which he calls, in barbarous language, *iliastrum*, the other *cagastrum*; the former including those disorders which grow "from seed, like apples and nuts," such as dropsy, jaundice, &c.; the other those which arise "from corruption, such as fevers, the plague, &c." (Paracels. Labyrinth. Medic. err. cap. 11.) We should consider our time, and that of our readers, as lost in examining the minutiae of this systematic jargon. If curiosity should impel any one to investigate the subject, he may peruse the various writings of Paracelsus himself, or Scheuermann's "*Hydromantia Paracelsica*," and "*Medicina reformata*;" as well as Quercetanus's "*Hermeticæ Medicinæ Defensio*," the works of Oswald Crollius, of Petrus Severinus, &c. Sennertus has attempted to refer the jargon of these chemists to the Galenical doctrines, from which, where it is intelligible, it seems to differ more in appearance than in essence: for it ultimately refers diseases to various conditions of the humours, which are estimated by the appearances and sensible qualities of the excretions and discharges, changing only the terms by which they are designated. (Loc. cit. cap. 16.) See *GALENICAL SYSTEM*.

As the study of chemistry advanced, and its various operations and products were investigated, pathologists began to modify the doctrines of Galen generally, and, laying aside the four humours of that writer, they designated the various humours, connected with different states of diseases, accord-

ing to analogous properties, fancied or real, in these morbid humours, and in the substances with which chemistry had made them acquainted. Thus we find the writers of the 17th century speaking of mucilaginous acid, vitriolic, tartarous, alkaline, corrosive, and acrid humours, of a saline, putrid, rancid acrimony, &c.; (see sir J. Floyer's "*Preternatural State of Animal Humours described by their sensible Qualities, &c.*") and likewise attributing much to the agency of the *spirits*, or animal spirits, which they seem to have considered as a secretion from the brain, communicated through the canals (as they were supposed to be) of the nerves, and constituting the most "exalted" portion of the animal humours. Our countryman, Willis, substituted this term for the *mercury* of Paracelsus, and speaks of the *salt*, *sulphur*, and *spirits*, as the three principal elements of the humours, to which he likewise adds *earth* and *water*. (Willis, *Diatriba de Fermentatione*, cap. 2. et de *Febribus*, cap. 1.) The humours of Galen, he contends, are not parts of the blood, but its recrements; the blood, properly so called, being the same in every part of the body, and the *pituita*, bile, and black bile, being the impurities thrown off by it, by means of a sort of effervescence or fermentation. In like manner, he observes; in the case of the fermentation of wine or porter, the lighter parts ascend to the top, forming the *flos* or yeast, and the thicker parts fall to the bottom, in the shape of dregs or tartar, leaving the liquor clear; yet no one, he says, could correctly affirm, that wine or porter is composed of yeast, tartar, and a vinous liquor.

But whatever notions pathologists have at different times adopted, in regard to the number and qualities of the elementary principles of the humours, they have all agreed in explaining the phenomena of diseases, by a certain intestine process, which has been variously compared to digestion, fermentation, effervescence, or ebullition, by which the humours were supposed to be purified, in consequence of the expulsion of the offending matter. The ancients considered this depuratory process as analogous to that of the digestion, or concoction (as they termed it) of the food in the stomach. For as the various substances, taken into the stomach for the purposes of nutrition, became gradually converted, by the process of concoction, which was carried on by the innate heat, into a bland homogeneous fluid, the chyle, which was absorbed by the mesenteric vessels for the nourishment of the body, while the dregs or fæces were carried off by the bowels, and discharged; in like manner they supposed that when the blood was in a state of *intemperies* or *dyscrasy*, the constitution was excited to febrile action, during which a sort of concoction, or digestive process, was carried on, and the blood, being thus depurated, the morbid humours were discharged by some of the usual excrementitious passages, the bowels, the bladder, the vessels of the skin, &c. When this discharge, whether a diarrhoea, a sediment in the urine, a profuse perspiration, &c. took place, a *crisis* was said to occur; and the purpose of the febrile commotion having been effected, the constitution ceased from its inordinate action, and health was restored. (See *CONCOCTION AND CRISIS*.) These discharges, with which it was observed that fevers often terminated, were considered as the proofs of the existence of the morbid humours in the blood, and of the origin of the febrile commotion, which continued while they were retained in the body, and ceased when they were expelled.

After the revival of learning, when chemistry had made some advances, the process of *fermentation* was more commonly assumed, as explanatory of the nature of febrile diseases. The physicians of the 17th century, Willis, Floyer, and others, referred all the phenomena of acute diseases to this source; and Sydenham acknowledges a great analogy

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In the two processes, yet remarks that the analogy is not perfect, and therefore prefers the term *commotion* to that of *fermentation* or *ebullition*, which other writers employ. (See his *Obs. Med.* § 1. cap. 4.) It is to be remarked, however, that the term "fermentation," in the acceptance adopted by Willis, signifies every species of chemical action, combination, or change, as well as the operations of animal and vegetable nutrition and growth, by which unorganized matter is assimilated with living bodies. See his *Diatriba de Fermentatione*.

During the 17th century, then, or rather from the latter part of the 16th century, nearly to the time of Dr. Cullen, the process of *fermentation* was considered as constituting the essence of all febrile diseases: and as fermentation, in regard to the production of vinous liquors, is excited commonly by some ferment introduced for that purpose, so a ferment was supposed to have found its way into the blood, when the animal system was excited into a febrile fermentation or commotion; and thus the blood was depurated, and the peccant matter expelled, or separated, like the dregs of wine. This ferment, or *cacoehymia*, was accounted for in various ways by different pathologists: but we may collect, on the whole, that they maintained the notion of two principal internal sources of *cacoehymia*, namely, improper *food*, and imperfect *secretion* from the different glandular organs. Fernelius remarks, "Omnis enim cacoehymia et humorum impuritas aut ex vitiosa viscerum affectione, aut ex improba vivendi ratione, non aliis ex causis, proficiscitur;" for, he adds, when the stomach, liver, spleen, and neighbouring organs, are diseased, either by *intemperies* or organic disorder, they produce humours, similarly diseased, even from pure and temperate aliment; and, when the food is immoderate, heavy, glutinous, or corrupted, it cannot be so wholly and perfectly changed by digestion, as not to carry some of its crude or unwholesome qualities with it to the blood and other humours. (See Fernel. *Febr. Curand. Methodus Generalis*, cap. 2.) In like manner, Willis observes, "Atque hujusmodi motus (nimirum sanguinis verè intestinum bellum) dependet tum à partium ipsius sanguinis heterogenitate, tum à variis fermentis, quæ à visceribus cruoris massæ inspirantur." (*Diatr. de Feb.* cap. 2.) It may be remarked, by the way, that in thus referring some of the morbid humours to the viscera, they seem to admit, though unintentionally, the primary action of the solids in the production of disease. In general, however, they looked to the concoction or fermentation of the aliment into chyle, as the source of the *cacoehymia*; and sir John Floyer considers all the internal variations of the humours as originating from a *defective* or *excessive* degree of the fermentation by which nutrition is carried on. "If the chyle be rightly fermented, all the humours arising from it are rightly prepared; but if the fermentation of that is vitiated, all the other humours, produced from vitiated chyle, retain a tincture of its defect in their preparation. This fermentation, by which the chyle and blood are prepared, may be depraved both ways, for it may be depressed under its natural state, or exalted above that degree, which is suitable to the natural temper of any animal; of both of which errors, and the *cacoehymias* depending on them, I shall next discourse." (Loc. cit. p. 34.) He then informs us that if the animal humours are digested or fermented "to any degree below their natural state, some of the cold *cacoehymias* are produced." Among these he enumerates a mucilaginous or pituitous, a tartareous or acerb, a flatulent, and a ferrous state of the humours. If the chyle be *over-fermented*, or digested too much, "it becomes bitter, acrid, rancid, or putrid;" it also produces a viscid state of blood, which occasions pain and inflammations, and shews

itself in the *fixiness* of blood that is drawn in inflammatory diseases; as well as "a salt acrimony, which corrodes and eats the gums, infects the skin with spots, and is the hot scurvy." (Ibid.) These various species of *cacoehymia*, then, are deemed *ferments*, by which the blood is excited to violent fermentative commotions, or fevers. But there are other diseases, "which depend wholly on an outward ferment received into the flesh, as in hydrophobia," or arise from the poison of serpents, or from "the touch of a salt humour to which the morpews, scab, pox, and scald-head are referable, and leprosy;" and "all malignant fevers, as the small-pox, measles, and plague, or pestilential fevers, have their original from the malignity of the air, and the poisonous sulphurs of the earth." (Floyer on Preternat. State of Humours, p. 15.) In like manner, Sydenham ascribes all epidemic diseases to a ferment, poison, or peccant matter, introduced into the blood by respiration, the air inspired being impregnated with this poison, either from the bowels of the earth, or from some peculiar influence of the planets:—while he attributes sporadic febrile diseases to the particular ebullition or inflammation of the blood, occasioned by the peculiar *intemperies* of individuals, which he seems to impute chiefly to the influence of external temperature, and to errors in diet, and the other *non-naturals*. Sydenham, *De Morbis Epidem.* chap. 2. and *Traçtat. de Podagra*.

From whatever source these *cacoehymias*, or peccant humours originate, they are considered as inimical to the well-being of the body; in consequence of which enmity, nature, or the supposed presiding principle of the constitution (which has been variously personified by different writers, under the titles of *Archeus*, *Antocratiea*, *Anima medica*, &c.) begins a contest, in order to expel from the blood this intrusive peccant matter. "Reason informs us," says Sydenham, "If I have any judgment, that a disease is nothing else than a struggle of nature, labouring with all her might to expel the morbid matter for the health of the patient." And, he remarks, in another place, "the inordinate commotion of the blood, which is the cause or concomitant of continued fever, is excited by nature, either for the purpose of separating some heterogeneous matter, contained in and offensive to it, or in order that the blood may be somehow or other altered in its diathesis." (Loc. cit. cap. 4.) Willis, Floyer, and others, view the subject in the same light, except that they introduce the *spirits* as the agents employed by nature, for the purpose of exciting the commotion in the blood. "A fever," says Floyer, "is a preternatural fermentation or effervescence of the blood, occasioned by some ferment irritating the spirits of the blood and nerves, for the dissolving, or putrefying, and separating some part of the cacoehymical *succus nutritius* from its mixture with the mass of humours. (P. 210.) According to the peculiar nature of the *cacoehymia*, or morbid humour, the nature of the fever was supposed to vary. "It is evident that every person has some antecedent *cacoehymia*," says the same writer, "by which the particular symptoms of the fever are produced, &c.—The several stages of the disease are very naturally described by the separation of the greater or less quantity of the *succus nutritius* from the blood, in the increase of the fever, and the *crisis* is a full or perfect separation of all the depraved *succus nutritius* from the mass of blood, when the fever is curable, and then the febrile effervescence ceases; but if the *succus nutritius* be but in part separated, the mass of humours remains turbid and undepurated, and the fever becomes fatal." (Floyer, chap. 15. App. i. of Fevers.) When this morbid matter, instead of being thrown out by the excretions, as in the case of critical discharges by diarrhoea, turbid urine, or sweats, is

"evacuated

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“evacuated upon particular parts, it produces the several inflammations; as quinseys, apoplexies, lethargies, palfies, pleurifies, rheumatisms, colics, which are the symptoms of the ordinary intermitting fever, and distinguish it into its several species.” Ibid.

But as *acutæ*, or febrile diseases, which terminate in a short time, (e. g. within the compass of fourteen or twenty-one days,) were considered as resulting from this active fermentation, and depuration of the humours; so, according to Sydenham, all *chronic* diseases, which run through a long and indefinite period, arise from an imperfect digestion or fermentation of the offending humours, and the consequent inability of nature to expel them. “For when any person has on the one hand, the principles of his nature debilitated or worn out, whether by old age, or by great and continual errors of the non-naturals, particularly in respect to food and drink; or, when, on the other hand, the organs of secretion have been so far weakened, as to be unable to depurate the blood, by carrying off its excrementitious and superfluous parts; in these cases, a greater quantity of humours is accumulated than the powers of the individual are capable of digesting or concocting, which humours, in consequence of their detention, undergo various degrees of fermentation and putrefaction, until at length they assume specific properties, and, according to the variety of deprivation, give rise to various forms of disease. They also fall upon particular parts, which are more disposed to receive them according to their peculiar qualities; and thus ultimately produce the long trains of symptoms, which are designated by the names of certain diseases, and which vary in relation to the nature of the morbid humour, and to the morbid condition of the part, respectively.” Sydenham, *Traçtat. de Podagra*.

It may be inferred, from the long and extensive prevalence of this humoral pathology, that it was not founded on mere fancy; but that something like sound observation and established facts could be adduced in support of it: and we have already hinted, that the common occurrence of certain profuse or altered excretions, towards the termination of febrile diseases, was deemed conclusive evidence of the truth of the hypothesis. But the doctrine was apparently strengthened still more, where there occurred not a mere increase of the ordinary excretions, but the discharge of a new and preternatural humour, altogether uncongenial with the healthy blood. Thus, when a tumour formed in any particular part, from the supposed settling of the peccant matter there, an inflammatory commotion or fermentation took place, in consequence of which, as the morbid matter became concocted, an abscess was formed, and the *pus* or *sanies*, which was at length discharged from it, was deemed a proof of the existence of the morbid ferment. In this way the buboes, which occur in the plague,—the abscesses in the different glandular, membranous, and muscular parts,—the eruptions in the skin in small-pox, measles, &c.—the formation of chalk-stones, after inflammatory gout,—and the expectoration of purulent and mucus sputa, in consequence of inflammation in the lungs and bronchial passages,—all these phenomena were believed to be conclusive proofs of the correctness of the humoral theory. And a still stronger proof appeared to exist in the well-known fact, that in small-pox, the plague, &c., the matter thus discharged was as completely a *ferment*, when received into the healthy humours of another person, as barm or yeast, introduced into a cask of infusion of malt or grape-juice. But this was not all: a sort of ocular demonstration of the existence of a morbid humour in the circulating fluids appeared to be deduced from the condition of the blood, which was drawn

from persons labouring under inflammatory diseases; and which, when it had cooled, exhibited a thick, tenacious *size* upon the surface of the coagulum, which has been called the *buff* or *buffy-coat* of the blood, and is not found on blood taken away, when no fever is present. Some collateral evidence was likewise deduced from other phenomena of diseases, and especially from the occasional occurrence of what is termed a *metastasis*, or the sudden translation, as it were, of a disease from one part of the body to another. As this was most commonly observed to take place between an external and internal part (as the gout, for instance, disappearing on the foot was transferred to the stomach;—or when an eruption faded on the skin, and vomiting or diarrhoea succeeded in the alimentary canal); so it was concluded, that the efforts of nature to expel the morbid matter had either been too feeble, or had been counteracted by improper treatment, and that the matter had fallen back upon the internal organs, where it excited the new struggle of nature to get rid of it by another channel.

This hypothesis, however, which is founded upon a coarse and vulgar analogy between a merely chemical process, and the operations of the living body, could only remain plausible, so long as the nature both of chemical combinations and of the properties of the animal economy had been the subject of very limited investigation: upon a more accurate inquiry, we find the points of analogy do not exist. The various changes, which take place in the fluids of the living body, do not occur from mere chemical action, as in the case of fermentation of the elementary parts upon each other; but arise from some peculiar action of the vessels, through which they circulate. Thus, the vessels of the liver alone elaborate the blood into bile; those of the kidneys form the urine; and those of the testes produce the feminal liquor. No admixture of the parts of the blood, in any other situation, is capable of generating these peculiar humours. In a similar manner, the morbid humours are the result of certain inordinate and irregular action of the vessels of particular parts. Thus, when any organ is in a state of inflammation, which, in fact, consists in an undue distention and activity of its vessels, the *pus*, or other matter, which is formed in consequence, is *generated in the inflamed part*, is the *effect* of the inflammatory action, and is not brought by the circulating blood, and deposited there, to be the *cause* of the inflammation. In small-pox, for example, or measles, the contagious matter is not found circulating with the mass of blood, but is *generated by the action of the vessels of the skin*, where alone it appears; if it contaminated the circulating mass, it would, doubtless, be deposited in the internal parts: but no pustules were ever found in these diseases, in any of the viscera or internal organs. No such change, as that occasioned by a ferment, therefore, takes place. This is farther proved by the fact, that by augmenting the action of the cutaneous vessels, on any particular part of the surface, (as by the application of heat, or any stimulating substance); on that particular portion, the quantity of pustules, in small-pox, will be augmented, and *vice versa*. In a word, it appears that, as neither bile, urine, nor saliva, is found circulating in the blood, so neither is the matter of contagious diseases existing there: just as in the *diabetes mellitus*, when the kidneys are constantly throwing out large quantities of saccharine matter, no traces whatever of sugar, or its elements, can be detected by the chemist in the circulating blood.

On the other hand, the inference drawn from the *size* crust, which is found upon the coagulum of blood, drawn under the circumstances of fever, is incorrect. For that *size* is simply the fibrin or coagulable lymph, which constitutes

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tutes a part of the blood under all circumstances, and which shews itself apparently more or less according to the less or greater rapidity of coagulation; which again is influenced by the force or rapidity of the action of the vessel from which it flows, or by its manner of flowing: inasmuch that if the blood be received into different vessels, during the same bleeding, the buffy coat will appear on some, and not on the others. It may be likewise added, that many fevers terminate in health, where no *crisis* or sensible discharge has preceded recovery.

With regard to the argument deduced from the occurrence of *metastasis*, little can be inferred from it in support of any position: the fact is very difficult of explanation by any hypothesis. It is at least equally easy, and consistent with our knowledge of the animal economy, to refer the transition of morbid *action* to the communication of certain internal and external parts by nervous sympathy; as to conceive that a morbid *matter* is mechanically transferred, through the medium of the circulating mass of fluids, from one organ to another. The existence of a morbid matter is hypothetical; whereas the existence of a sympathetic connection, through the medium of nerves, is a matter of observation and experiment: of which the connection between the skin and the alimentary canal may be mentioned as an example. If we excite nausea or vomiting in the stomach, we induce a perspiration on the skin; and by moistening the surface, we speedily relieve the sensation of thirst, &c. Besides, there is no proof of the actual translation of the morbid matter, or the same form of disease in cases of *metastasis*: for, to instance gout, we do not find the chalky matter of the hands or feet appearing in the stomach, when the disease is transferred to that organ, but what is inflammation on the surface, is commonly spasm in the stomach; and, on the principle of nervous sympathy, the identity of the diseases, thus excited in distant parts, is not a necessary supposition.

The arguments for the contrary doctrine, which refer the phenomena of life, whether in a state of health or disease, to the agency of the nervous energy or sensorial power, resident in the living solids, and to the various action of the moving fibres, have been deduced from a long series of observations and experiment. See LIFE, EXCITABILITY, &c.

The pernicious results of the practice, however, to which this humoral pathology led its advocates, afford an additional refutation of its principles. The doctrine, that nature instituted all morbid actions, for the purpose of expelling from the constitution certain offensive and dangerous matter, either conducted, on the one hand, to sanction a very feeble and inert practice, lest the salutary operations of nature should be impeded or deranged; or, on the other, to enforce an active practice, by which it was intended to aid and co-operate with nature in her supposed two-fold endeavours, first to concoct or duly ferment the morbid matter, which annoyed her, and secondly, to expel it by the proper emunctories. Of these two practical systems, the first, or *la médecine expectante*, as the French have emphatically called it, is, doubtless, the least mischievous. It consisted in doing nothing, with the appearance of doing something; and, therefore, obtained the confidence of the patient, and tranquillized his mind, which constitutes one step towards a cure. The remedies consisted of what have been termed demulcents, diluents, humectants, &c. or aqueous liquors, with various vegetable mucilages, sugars, and starches, all abundantly harmless in their qualities, and certainly not interfering with any process of the constitution, whether salutary or deleterious. But if this be the highest reach of the medical art, (which, indeed, is rather the rejection of all art,) to what purpose have the

studies of scientific men been directed, the structure and functions of the human body been investigated, and a particular class of mankind devoted to the practice of medicine? *La médecine expectante* is surely the weakest of all empiricism.

It has always been a popular doctrine, and it is one that carries a great deal of plausibility in the face of it, that the main object, and the sum total of the powers of medicine, consist in aiding the natural efforts of the constitution for the removal of diseases. But this proposition requires considerable qualification. If it be merely meant, that medicine can only operate through the medium of the powers or energies of the living body, and that, independently of these vital energies, medicine has no operation, the position is a *truism* which cannot be questioned. But if it be meant, that the sole power and object of the medical art are limited to the furthering of all morbid excitement, and to the removal of obstacles to the completion of the purposes of that excitement; *i. e.* to assisting the efforts of nature or guarding them from interruptions, the assertion appears to be altogether gratuitous, and nothing less than an abuse of language. In the first place, it is founded on the assumption, that all diseased action is salutary; which the effects of numerous diseases directly contradict, and which has no better foundation than two other gratuitous assumptions, namely, the existence of a morbid ferment in the blood, and of an *archeus*, or rational soul, governing all the operations of the animal economy. But, secondly, admitting the salutary tendency of diseased actions, considered as the efforts of nature, by what signs are we to interpret her intentions, or to discover when she requires assistance, and when restraint? On this point the greatest practical errors are likely to be committed, and have, in fact, been constantly and extensively committed, by those humoral pathologists, who have presumed upon their knowledge of the intentions of nature. Had they been unbiassed observers of nature's indications, they would have attended, probably, to the suggestions of those sensations and instinctive feelings in the sick, which are generally deemed sufficient directions to the healthy, and which appear to be the universal guides to the physical conduct of the whole animal creation. They would have allowed the thirsty to drink, the hot to be cooled; and would have attempted to relieve the various painful sensations, according to the cravings which they suggested. But their practice was commonly the very reverse of this: for they deduced their inferences, not from these unequivocal guides, but from their *hypothetical* conceptions of the proceedings of nature. Their own proceedings, therefore, were directed to encourage the increase of the disease. Thus in all fevers, even in those where there was considerable inflammatory affection of the whole skin, (as in small-pox,) they accumulated the heat of the patient, already almost intolerable, with a view to perfect the fermentation or concoction, which they supposed nature was labouring to accomplish; and hence they rendered mild fevers severe, and severe ones certainly fatal. At the same time, they stimulated the action of the heart and arteries, by cordial, volatile, and aromatic medicines, and by heat conveyed internally in the drink, and thus still farther multiplied the evil. And it was particularly unfortunate for the patient, and for medicine, that this augmentation of the original disease, (as in the increase of the eruption in small-pox, scarlet fever, &c.) and even the actual excitement of new diseases, (as in the military eruption over the skin, which this heating practice frequently produced in all fevers,) were conceived by these pretended interpreters of nature, to be nothing less than new and ocular proofs of the truth of their doc-

trine, and of the efficacy of their practice! They had *brought out* the morbid matter! But the multitudes who perished notwithstanding this happy event, but too fully demonstrated that both nature and art were guilty of perpetual mistakes. The sagacious Sydenham, although under the influence of the humoral pathology, detected the fallacy of the heating and concocting practice, in respect to the cure of small-pox, while his contemporaries continued to be the slaves of hypothetical error. But it remained for the present age, not only to establish the practice, which he suggested, but to extend it to all febrile diseases, and to pursue it to a degree far beyond any conception which he had formed upon the subject.

It cannot be doubted, that one of the greatest improvements ever made in the medical art, is the discovery of the circumstances, under which a free application of *cold* may be made in febrile diseases, aided by the early use of purgatives, and the removal of every other species of irritation on the living solid, which constitute what has been called the antiphlogistic plan of treatment. For the establishment of this practice, in regard to the free use of *cold*, upon clear and philosophical grounds, we are principally indebted to the late Dr. Currie of Liverpool. So far from experiencing any injury or danger from not encouraging the supposed concoction, or from repelling the morbid matter, it is ascertained, by innumerable observations, that it is most salutary to reduce the temperature of the surface of the body, in the height of the eruptive fever of scarlatina, for instance, and that this otherwise formidable disease may be thus cut short in its duration, mitigated in its severity, and conducted mildly to a safe termination. (See *COLD, as a remedy*: also *HEAT, FEVER, and Scarlet Fever*.) In a word, it is now ascertained, that that practice, in febrile diseases, which is founded on the principle of removing or diminishing the excitement of the sensible and irritable solids, and thus of lessening the increased action of the vessels, generally and locally, without any reference to a peccant state of the humours, is attended with a degree of success, not to be compared with that of the humoral pathologists; and that man is more correctly treated as a being possessed of sensorial powers, than as a barrel of fermenting fluids.

It were unnecessary to enter into other practical absurdities of the humoralists; such as the frequent letting of blood, even in chronic diseases, upon the supposition that the morbid matter, which is believed to contaminate the whole circulating mass, should be all discharged with the small portion of this fluid, that escapes through the orifice made by the lancet, and leave the remaining mass thoroughly depurated;—the use of purgatives on the same principle:—the interdiction of purgatives in the early stage of febrile diseases, because the peccant matter is supposed to be yet in a crude or uncoacted state;—and lastly, the numberless farragos of useless and inert herbs, mixed together upon some fanciful notion of their properties for correcting various modifications of *caco-chymia*, which they constantly prescribed in chronic maladies; the qualities both of the bane and antidote, the morbid humour and its corrector, being equally gratuitous and hypothetical.

We have said nothing on the subject of that humoral theory, which referred diseases to the two opposite conditions of the fluids, the *acid* and the *alkaline* caco-chymia, upon which Boerhaave and some others reasoned with considerable ingenuity: for this doctrine was never generally received; and, except in so far as the contents of the stomach and first passages exhibited a tendency to one or other of these qualities, according to the modifications of indigestion, it is

obviously founded in misapprehension: (see Boerhaave, *Praxis Medica*, vol. i. p. 122. et seq.) and further, as Dr. Cullen remarks, it is not consistent with what Boerhaave himself has delivered elsewhere. (First Lines, pref. p. xxx.) The doctrine of a *spontaneous gluten* in the blood, inculcated by that celebrated author, (*loc. cit.* p. 145.) is also gratuitous. Some of the proofs adduced for its existence are manifestly founded on a mistake with respect to what has been called the buffy coat, or inflammatory crust; and the many examples given by Boerhaave of a *gluten* appearing in the human body, are all of them nothing more than instances of collections or concretions, found out of the course of the circulation.

To conclude with the words of Dr. Cullen, although the fluids of the human body may undergo various changes, we must “maintain that the nature of these changes is seldom understood, and more seldom still is it known when they have taken place; that the reasonings concerning them have been, for the most part, purely hypothetical; have therefore contributed nothing to improve, and have often misled, the practice of physic. In this, particularly, they have been hurtful, that they have withdrawn our attention from, and prevented our study of, the *moving powers* of the animal system, upon the state of which the phenomena of diseases do more certainly and generally depend.” First Lines, pref. p. xxxii.

HUMORISTS, *gli HUMORISTI*, the title of a celebrated academy of learned men at Rome. See **ACADEMY of Humorists**.

HUMOROSI, the name of an academy established at Cortona in Italy.

The Humorosi of Cortona must not be confounded with the Humoristi of Rome.

HUMOUR, or **HUMOR**, in its general sense, signifies the same as liquor, or liquid.

HUMOUR, in *Medicine*, is applied to any fluid part of the animal body, as to the blood, bile, mucus, serum, saliva, &c. as well as to the pus, sanies, &c. which result from disease. The ancient physicians, and after them the moderns down to a late period, considered health and disease as arising from a due proportion or disproportion of *four humours* in the body; namely, of blood, phlegm, yellow bile, and black bile. (See **GALEN**.) This doctrine, respecting the origin and nature of diseases, as dependent altogether on the state of the *humours* of the body, has been denominated the **HUMORAL Pathology**; which see.

HUMOURS of the Eye. Anatomists and opticians distinguish three particular humours of the eye (see **EYE**); which they call the aqueous, crystalline, and vitreous.

These three humours have each their share in the refraction of the rays of light necessary to vision.

Authors, both ancient and modern, speak of the regeneration of the humours of the eye; and give us instances of their reproduction, when, by any accident, they had been let out; but their instances, strictly considered, generally go no farther than to the aqueous and vitreous humours.

Borri only, in a letter to Bartholine, says as much of the crystalline. He affirms, that he has slit the pupil of the eye of divers animals, and squeezed out all the humours, even the crystalline, and has afterwards perfectly restored them again to sight; and that the eyes of the birds, whereon the operation had been performed, instead of being damaged thereby, were rendered more lively and vigorous than usual. He adds, that he had performed the same experiment on divers persons, with so much success, that there remained not the smallest appearance of a cicatrix in the eye. See **CATARACT**.

HUMOUR.

HUMOUR is also used, in *Dramatic Poetry*, for a subordinate species of what the critics call manners.

Humour is usually looked on as peculiar to the English drama, at least our comic poets have excelled therein, and carried it beyond those of any other nation; and our's is, perhaps, the only language that has a name for it. The nature of such a free government as our's; and that unrestrained liberty which our manners allow to every man, of living entirely after his own taste, afford full scope to the display of singularity of character, and to the indulgence of humour in all its forms. Hence comedy has a more ample field, and can flow with a much freer vein in Britain than in France, where a much greater uniformity has been spread, at least in former times, over the outward behaviour and characters of men, by the influence of a despotic court, subordination of ranks, and the rigid observance of the forms of politeness and decorum. As to our English dramatists, who does not acknowledge the transcendent excellence of Shakspeare in the province of humour? Of the later comic writers, Congreve has an exuberance of wit, but Farquhar has more humour. It has been observed, however, with too much truth, that, to the discredit of our stage, as well as of the national delicacy and discernment, obscenity has too often in English comedy been made to supply the place of wit, and ribaldry the place of humour. It should be acknowledged at the same time, that a considerable reformation has taken place in this respect.

Humour is usually considered by critics as a fainter or weaker habitual passion peculiar to comic characters, as being chiefly found in persons of a lower degree than those proper for tragedy.

Every passion may be said to have two different faces; one that is serious, great, formidable, and solemn, which is for tragedy, and another that is low, ridiculous, and fit for comedy; which last is what we call its humour.

Wit only becomes few characters; it is a breach of character to make one half the persons in a modern, or indeed in any comedy, talk wittily and finely; at least at all times, and on all occasions. To entertain the audience, therefore, and keep the dramatic persons from going into the common, beaten, familiar ways and forms of speaking and thinking, recourse is had to something to supply the place of wit, and divert the audience, without going out of character; and this end is attained by humour; which therefore is to be looked on as the true wit and humour.

A very good judge, the duke of Buckingham, makes humour, to be all in all; wit, according to him, should never be used, but to add an agreeableness to some proper and just sentiment, which, without some such turn, might pass without its effect.

HUMOUR, or *continued wit*, in *Oratory*, is a certain sprightliness and vivacity of thought, which runs through a discourse, and shews itself in agreeable images, beautiful turns, and a facetious manner of expression, suited to the subject, and affecting the hearers with pleasure and delight, though not to that degree as to excite laughter, or any great emotion of the passions.

The nature and efficacy of humour are unravelled by Dr. Campbell, in his "Philosophy of Rhetoric," in the following manner. A just exhibition of any ardent or durable passion, excited by some adequate cause, instantly attaches sympathy, the common tie of human souls, and thereby communicates the passion to the breast of the hearer. But when the emotion is either not violent or not durable, and the motive not any thing real, but imaginary, or at least quite disproportionate to the effect; or when the passion displays

itself preposterously, so as rather to obstruct than to promote its aim; in these cases a natural representation, instead of fellow-feeling, creates amusement, and universally awakens contempt. The portrait in the former case we call "pathetic," in the latter "humorous." The passion which humour addresses as its object is contempt; and the subject of humour is always character, but not every thing in character; its foibles, generally, such as caprices, little extravagancies, weak anxieties, jealousies, childish fondness, pertness, vanity, and self-conceit. In expressing passion as it appears in the more trivial occurrences of life, we commonly use this term, as when we talk of good humour, ill humour, peevish or pleasant humour; hence it is that a capricious temper we call humoursome, the person possessed of it a humorist, and such facts or events as afford subject for the humorous, we denominate comical. Accordingly, the term humour is used to express any lively strictures of such specialities in temper and conduct, as have neither moment enough to interest sympathy, nor incongruity enough to excite contempt. In this case humour, not being addressed to passion but to fancy, must be considered as a kind of moral painting, and differs from wit only in these two things; first, in that character alone is the subject of the former, whereas all things whatever fall within the province of the latter; secondly, humour paints more simply by direct imitation, wit more variously by illustration and imagery. Of this kind of humour, merely graphical, Addison hath given us numberless examples in many of the characters he hath so finely drawn, and little incidents he hath so pleasantly related in his *Tatlers* and *Spectators*. We might remark of the word *humour*, as well as of the term *wit*, that we scarcely find in other languages a word exactly corresponding. The Latin *facetia* seems to come the nearest. Thus Cicero, "Huic generi orationis aspergentur etiam sales, qui in dicendo mirum quantum valent; quorum duo genera sunt, unum facetiarum, alterum dicacitatis; utetur utroque, sed altero in narrando aliquid venustè, altero in jaciendo mitiendoque ridiculo; cujus genera plura sunt." Orator. 48. Here one would think, that the philosopher must have had in view the different provinces of wit and humour, calling the former *dicacitas*, and the latter *facetia*: nevertheless these two words are often confounded both by him and other Latin authors.

Mr. Pope, in the second Canto of his "Rape of the Lock," has furnished us with an instance of wit and humour combined, where they reciprocally set off and enliven each other;

"Whether the nymph shall break Diana's law,
Or some frail China jar receive a flaw,
Or stain her honour, or her new brocade;
Forget her prayers, or miss a masquerade;
Or lose her heart, or necklace at a ball;
Or whether heaven has doom'd that Shock must fall."

This is humorous, as it is a lively sketch of the female estimate of mischances, as our poet's commentator rightly terms it, marked out by a few striking lineaments. It is likewise witty, for not to mention the play on words like a trope familiar to this author, you have here a comparison of a woman's chastity to a piece of porcelain—her honour to a gaudy robe—her prayers to a fantastical disguise—her heart to a trinket;—and all these together to her lap-dog, and that founded on one lucky circumstance, (a malicious critic would perhaps discern or imagine more,) by which these things, how unlike soever in other respects, may be com-

pared, the impression they make on the mind of a fine lady. Hudibras abounds in all the varieties of wit, nor is his poem destitute of humour, exhibited in the characters of the knight and his squire, and more especially in the consultation of the lawyer, part iii. canto 3. But there is perhaps no book in any language, in which the humorous is carried to a higher pitch of perfection, than in the adventures of the celebrated knight of La Mancha.

Humour, says Dr. Campbell, when we consider the contrast of its effects, contempt and laughter, (which constitute what in one word is termed *derision*), to that sympathy and love, often produced by the pathetic, may in respect of these be aptly compared to a concave mirror, when the object is placed beyond the focus: in which case it appears by reflection, both diminished and inverted, circumstances which happily adumbrate the contemptible and the ridiculous.

HUMOUR, *Crystalline, Disease, and Opacity of*. See CATARACT.

HUMP, in *Geology*, is applied by Dr. Townson and others to express a sudden rising or bump in the terrestrial strata, in some instances, called ridges, horse-backs, &c. by practical miners. It seems probable, that many denuded patches of strata, like the limestone of *Crib*, (see that article,) in Derbyshire, Breedon, and Cloud's-hill, in Leicestershire, Dudley Castle, Wren's-nest, and other adjacent hills in or near Staffordshire, &c. owe their origin to humps previously existing in the strata, thus locally exposed by the denudating or carrying off the thinner parts of the superincumbent strata, which covered these sudden limestone hills.

HUMP, *Naked, North-west, South, and South-east*, in *Geography*, small islands in the Mergui Archipelago, in N. lat. $10^{\circ} 23'$ — $10^{\circ} 19'$ — $10^{\circ} 9'$,—and $10^{\circ} 12'$, respectively.

HUMPH, in *Mining*, signifies, in some parts of Scotland, a blind or foul sort of coal, of little value.

HUMPHREY, PELHAM, in *Biography*, was brought up with Blow and Mich. Wife, in the Chapel Royal, under Capt. Cook, who was appointed master of the children at the Restoration. When Humphrey lost his treble voice, he was admitted in 1666 a gentleman of his majesty's chapel, and on the death of Capt. Cook, 1672, was appointed master of the children. He did not, however, long fill this honourable station, as he died, very much regretted, at the early age of twenty-seven, in 1674.

His choral compositions are numerous for so short a life; as, besides his seven full and verse anthems, printed by Dr. Boyce, there are five preserved in score by Dr. Aldrich, in Christ-church, Oxford; and six in Dr. Tudway's collection, British Museum, that have never been printed.

As French music was much better known in England during the reign of king Charles II. than Italian, there are in the melody of this composer, and in that of Purcell, passages which frequently remind us of Lulli, whom king Charles pointed out to his musicians as a model. Indeed, it is said that Humphrey was sent to Paris by the king, in order to study under Lully; and that, besides his merit in composition, he was an excellent performer on the lute. Indeed, he seems to have been the first of our ecclesiastical composers who had the least idea of musical paths in the expression of words, implying supplication or complaint.

His anthem for three voices, "Have Mercy upon me O God," has great merit on the side of expression, for the time in which it was composed, as well as harmony, in which there are several combinations that seem new

and boldly hazarded for the first time, at least in choral music.

In his verse anthems many new effects are produced by modulation and notes of taste and expression.

The favourite interval in the melody of this composer is the false 5th, and, if it be true, as related by Dr. Boyce, that Humphrey studied under Lulli at Paris, he probably acquired his partiality for this interval there, as it has long been in great favour in the serious French opera.

It is somewhat remarkable, that all the seven-verse anthems which Dr. Boyce has inserted in his collection, by this plaintive composer, should be in flat keys; most of them in C and F minor, which are much out of tune on the organ by the usual temperament of that instrument; however, if well sung, these crude chords may add to the melancholy cast of the compositions.

HUMPHREYS, LAURENCE, was born at Newport Pagnell, Bucks, about the year 1527. He was educated partly at Cambridge, and partly at Oxford. In 1549 he was admitted to the degree of B.A. and was elected fellow of Magdalen college, Oxford. In the year 1555 he obtained the permission of his college to travel for improvement for a year, on condition that he should avoid heretical company and places. This licence furnished him with means of withdrawing from the reach of queen Mary's persecution, and of pursuing his religious enquiries in company with men whose opinions were congenial with his own. He therefore wisely staid abroad till the death of the queen rendered his return safe. Upon his arrival in England, he was restored to his fellowship, which had been taken from him for his disobedience to the injunctions of the licence which had been granted him; in 1560 he was appointed the queen's professor of divinity at Oxford, and in the following year he was elected president of his college. He suffered a short imprisonment for refusing to take the sacrament in a kneeling posture, and though he was soon set at liberty, yet he got no preferment till he surmounted those scruples which amounted to non-conformity. After this he was created dean of Gloucester, and in 1580 he was removed to the deanery of Winchester, which was the highest preferment to which he ever attained. He died in 1590. His writings are very numerous, among which the following may be noticed: "Epistola de Græci literis et Homeri Lectione et Imitatione:" "De Religionis conservacione et reformatione deque primatu Regum:" "De ratione interpretandi Auctores:" "Optimates sive de nobilitate, ejusque antiqua Origine:" the Life of bishop Jewel, and sermons. Dr. Humphreys was a great and general scholar, an able linguist, and a deep divine.

HUMPHRIES, JOHN, a young English musician of promising abilities, and a good performer on the violin, published, before he was twenty years of age, six solos for that instrument, which manifested more genius than experience. However, they were well received by dilettanti performers, from being natural and easy. His success in that publication encouraged him to further attempts, and in the year 1728 he published, by subscription, twelve sonatas for two violins and a base, which had some originality and agreeable imitations of Corelli, that made them the delight of musical clubs and provincial concerts in our own memory.

Humphries died about the year 1730, and left in MS. twelve concertos on Corelli's model, which were printed after his decease, by Cooke, music-seller, in New-street; Covent Garden; but the more fanciful works of Vivaldi, Alberti, Teffareni, and Albinoni, being in circulation, and

the more solid productions of Handel and Geminiani having refined our taste, the posthumous work of poor Humphries followed him down the stream of Oblivion, unnoticed by the inhabitants of Earth.

HUMPOLETZ, in *Geography*, a town of Bohemia, in the circle of Czazlau; 8 miles S.W. of Teutsch-Brod.

HUMPPILA, a town of Sweden, in the province of Tavastland; 30 miles W. of Tavasthus.

HUMULUS, in *Botany*, the Hop. This name is derived by Linnæus from *humus*, moist earth, such as the plant in question prefers; but however ingenious this explanation may be, it appears that *Humulus* originated by corruption from *Humula*, a barbarous Latin word, of one common origin with *Umulu*, or *Huml*, under which appellations, or something like them, the hop is known amongst various nations of the north.—Linn. Gen. 522. Schreb. 689. Willd. Sp. Pl. v. 4. 769. Mart. Mill. Dict. v. 2. Sm. Fl. Brit. 1077. Juss. 404. Lamarck. Illustr. t. 815. (*Lupulus*; Gært. t. 75.)—Class and order, *Diœcia Pentandra*. Nat. Ord. *Scabridæ*, Linn. *Urticæ*, Juss.

Gen. Ch. Male. Cal. Perianth of five, oblong, concave, obtuse leaves. Cor. none. Stam. Filaments five, capillary, very short; anthers oblong, bursting by a pore on each side, at the summit.

Female. Cal. the scales of a catkin, ovate, large, tubular at the base, each containing two flowers, and at length scarious, permanent. Cor. of one petal, small, obtuse, lateral, enfolding the germen of each flower on one side. Pist. Germen small, roundish, compressed; styles two, very short; stigmas long, awl-shaped, downy. Peric. none, except the permanent scales and corolla. Seed one, roundish, with a spiral embryo.

Ess. Ch. Male. Calyx of five leaves. Corolla none. Anthers with two pores at the summit.

Female. Calyx the scales of a catkin, two-flowered. Corolla of one petal, lateral. Styles two. Seeds solitary, invested with the corolla.

1. *H. Lupulus*, the only species of this very natural and distinct genus. Linn Sp. Pl. 1457. Engl. Bot. t. 427. Mill. Illustr. t. 88. Bulliard. t. 234.—Native of hedges and bushy places in a moist deep soil, in various parts of Europe, as well as in North America, blossoming in July. The roots are perennial, branching. Stems annual, twining, angular, rough, with deflexed prickles, leafy. Leaves opposite, stalked, heart-shaped, undivided or three-lobed, often five-lobed, serrated, veiny and harsh. Footstalks strong, angular, prickly. Stipules between the footstalks, reflexed, ovate, entire, smooth. Flowers green; the males panicle, numerous; females on a separate plant, in axillary, stalked, ovate, drooping catkins, of an aromatic scent, and bitter narcotic quality.

HUMULUS, in *Gardening*, comprizes a well-known plant of the more hardy, twining, perennial kind; of which the species is the cultivated hop (*H. lupulus*.)

There are plants of this kind which bear only male flowers, that grow in long clusters; and others which bear female flowers only, that are produced in roundish, scaly, and leafy clusters. The latter is the sort mostly grown; and which is distinguished into the early white, the long white, the oval, and the square garlic hop.

The hop-plant is principally grown in gardens, for the ornament and variety which it affords by twisting round different kinds of support to a very considerable height.

Method of Culture.—The hop is a plant which is usually increased by planting portions of the suckers taken from the

roots of the old stocks. They are commonly cut six or seven inches in length, each having three or four eyes or buds to throw out shoots from. And such as are of proper sorts should constantly be selected for this purpose, removing from each set every part of the old vine, as well as every portion that is hollowed or decayed in any way. The sets may be planted out in the autumn in any open place where the ground is well prepared and in a mellow condition.

The hop may also be raised by laying down the young shoots in the summer season, taking off their tops at the time the work is performed. These soon strike root, and form sets for use in the ensuing spring. See *Hop*.

Hop clumps have a good effect in many cases, in large gardens or pleasure grounds.

HUMUS, in *Natural History*, a term formerly used for the decayed vegetable and mineral mixtures, more commonly known by the name of virgin mould, and forming the superficial crust of the earth. Parkinson's Organic Remains, vol. i. p. 83.

HUN, in *Geography*, a town of Africa, in Fezzan; 20 miles N. of Mourzouk.

HUNARY, two small islands near the W. coast of Hindoostan; 85 miles S. of Bombay. N. lat. 18° 47'. E. long. 72° 38'.

HUNAULD, FRANCIS JOSEPH, in *Biography*, an eminent anatomist and physician, was born at Chateau-Briant, in February 1701. His father was a physician, and practised at St. Malo. He studied first at Rennes, and afterwards at Angers and Paris, and received the degree of M. D. at Rheims in 1722. On his return to Paris he studied anatomy and surgery with great assiduity, under the celebrated teachers Winslow and Du Verney, and was admitted into the Academy of Sciences in 1724. Having been honoured with the appointment of physician to the duke of Richelieu, he accompanied that nobleman in his embassy to the court of the emperor Charles VI. at Vienna, and ever afterwards retained his entire confidence, and had apartments in his house. On the death of Du Verney, in 1730, Hunauld was appointed his successor, as professor of anatomy in the king's garden, where he soon acquired a reputation little short of that of his predecessor, and found the spacious theatre overflowing with pupils. Having been admitted a member of the faculty of medicine of Paris, he practised his profession with great success, and attracted the notice of the court. He took a journey into Holland, where he became acquainted with the celebrated Boerhaave, with whom he ever afterwards maintained a friendly correspondence; and, in 1735, he visited London, where he was elected a member of the Royal Society, at one of the meetings of which he read some "Reflections on the Operation for Fistula Lacrymalis," which were printed in the Transactions. He was cut off in the vigour of life by a putrid fever, in December 1742, being in his forty-second year. The greater part of his writings consist of papers, which were published in various volumes of the memoirs of the Academy of Sciences, between the years 1729 and 1742 inclusive. Osteology was a favourite subject of his enquiry, and some of the most curious of his observations relate to the formation and growth of the bones of the skull. He likewise traced with great accuracy the lymphatics of the lungs to the thoracic duct, and the progress of some of the nerves of the thoracic viscera. He published anonymously, in 1726, a critique, in the form of a letter, on the book of Petit, relative to the diseases of the bones, which occasioned some controversy, and received the formal disapproval of the academy. Hunauld had collected a considerable anatomical museum, which was especially rich in preparations illustrative of

of osteology and the diseases of the bones, and which came into the possession of the academy after his death. Eloy Dict. Hist. Gen. Biog.

HUNBERGS, in *Geography*, a town of Denmark, in North Jutland; 8 miles S.W. of Aalborg.

HUNDERBUHL, a town of Transylvania; 12 miles S. of Schesburg.

HUNDRED, CENTUM, *Cent.* the number of ten times ten or the square of ten.

The place of hundreds makes the third in order in the Arabic numeration.

We usually express the proportion of the profits made in the way of commerce, &c. by the hundred.

HUNDRED of *Lines*, a denomination of measure, in some places denoting 35, and in others 25 heaped bushels or bags of line.

HUNDRED, in denomination of weights, of books is 104lb. avoirdupoise = .9285715 great cwts. (112) = .8684646 long cwts. (120.)

HUNDRED of *Coals*, at Asbourn, in Derbyshire, &c. = 128lb. = 8 stone of 16lb. = 1.142857 great cwts. = 1.0666 long cwts.

HUNDRED of *Ling, Ccd, &c.* = 124lb. = 1.107143 great cwts. = 1.03333 long cwts.

HUNDRED, *Great, or Standard*, = 112lb. avoirdupoise = 112lb. = 4 quarters = 7 stone (of 16lb.) = 8 stone horseman's, (of 14lb.) = 14 stone, London (8lb.) = 14 cloves (8b.) = 16 cloves (7lb.) = 1792 ounces avoirdupoise = 20,672 drams = .93333 long cwts. (120lb.) = 103lb. 2½oz. Dutch Scotch weight. This is the legal hundred-weight of the custom-house in London, and all the southern parts of England.

HUNDRED, *Long, or Northern*, = 12clb. = 8½ stones (14lb.) = 12 rations (10lb.) = 1.0714286 great cwts. (112lb.) This is the hundred-weight legalized on all or most of the canals and navigable rivers in the north of England, and of the midland counties; by their acts for collecting tolls, &c.

HUNDRED is also used as a measure to express a certain quantity or number of things. A hundred of salt at Amsterdam is fourteen tuns.

Deal boards are sold at six score to the hundred, called the *long* hundred. Pales and laths are counted at five score to the hundred, if five feet long; and six score if three feet long.

HUNDRED *Weight*, or the great hundred. See QUINTAL.

HUNDRED, *Docimastic*. See CENTNER.

HUNDRED, *Hundredum, Centuria*, is also a part or division of a shire or county. It was so called, according to some, because each hundred found a hundred sidejussors, or sureties of the king's peace, or a hundred able men of war.

Others rather think it to have been so called, because originally composed of a hundred families. It is true, Brompton tells us, that a hundred contains *centum villas*; but then Giraldus Cambrensis writes, that the Isle of Man hath three hundred and forty-three villas. In both these places the word *villa* must be taken for a country family; for it cannot mean a village, because there are not above forty villages in that island.

So, where Lambard tells us, that a hundred is so called, *a numero centum hominum*, it must be understood of a hundred men who are heads and chiefs of so many families. Hundreds were first ordained, or rather introduced, by king Alfred, the twenty-ninth king of the West Saxons: "Alfredus rex (says Lambard, verbo *centuria*) ubi cum Guth-

runo Dano fœdus inierat, prudentissimum olim a Jethrone Moisi datum tecutus concilium, Angliam primus in satrapias, centurias, et decurias partitus est. Satrapiam, shyre, a *Scyrian* (quod partiri significat) nominavit, centuriam *hundred*; et decuriam teoting five tiennantale; *i. e.* decemviralo collegium, appellavit; atque iisdem nominibus vel hodie vocantur, &c." See COUNTY and TITHING.

We have already said that the institution of hundreds was rather introduced than invented by Alfred. For they seem to have obtained in Denmark; and we find that in France a regulation of this sort was made above 200 years before; set on foot by Clotharius and Childebert, with a view of obliging each district to answer for the robberies committed in its own division. These divisions were, in that country, as well military as civil; and each contained 100 freemen, who were subject to an officer called the *centenarius*; a number of which *centenarii* were themselves subject to a superior officer called the *count* or *comes*. (Montesq. Sp. Laws. 30. 17.) And indeed something like this institution of hundreds may be traced back as far as the ancient Germans, from whom were derived the Franks, who became masters of Gaul, and the Saxons who settled in England; for both the thing and the name, as a territorial assemblage of persons, from which afterwards the territory itself might probably receive its denomination, were well known to that warlike people. "Centeni ex singulis pagis sunt, idque ipsum inter suos vocantur; et quod primo numerus fuit, jam nomen et honor est." Tacitus de Mor. Germ. 6.

Such is the original of hundreds, which still retain the name, though the jurisdiction be devolved to the county-court; some few excepted, which have been by privilege annexed to the crown, or granted to some great subject, and so remain still in the nature of a franchise.

This has been ever since the stat. 14 Edw. III. whereby these hundred courts, formerly farmed out by the sheriff to other men, were all, or most part, reduced to the county-court, and so remain at present; so that where we read now of hundred-courts, they are to be understood of several franchises, wherein the sheriff has nothing to do by his ordinary authority, except they of the hundred refuse to do their office. See HUNDRED COURT.

If any homicide be committed, or dangerous wound given in the day-time, and the offender escape, the town shall be amerced. And if out of a town the hundred shall be amerced. (2 Hawk. 74.) The hundred shall also make good the damage in case of robbery (see HUE-AND-CRY), cutting banks or hop-binds; burning houses, barns, out-houses, hovels, cocks, mows, or stacks of corn, straw, hay, or wood; mines or pits of coal; destroying granaries or corn intended for exportation; destroying turnpikes or works of navigable rivers, &c. 1 Geo. I. cap. 5. 9 Geo. I. cap. 22. 29 Geo. II. cap. 36. 8 Geo. II. cap. 22. 10 Geo. II. cap. 32. 11 Geo. II. cap. 22. 22 Geo. II. cap. 46.

HUNDRED, or *Hundredum*, is sometimes also used for an immunity or privilege, whereby a man is quit of the hundred-penny, or custom, due to the hundred.

HUNDRED-court. See COURT.

HUNDRED *Lagh*, signifies the hundred court, from which all the officers of the king's forest were freed by the charter of Canutus.

HUNDRED *Suit*, the payment of personal attendance, or deriving suit and service at the hundred court.

HUNDREDERS, or HUNDREDORS, *Hundredarii*, are men impanelled, or fit to be impanelled, of a jury, upon any controverly,

controversy, dwelling within the hundred where the land in question lies.

By the policy of the ancient law, the jury was to come *de vicinato*, from the neighbourhood of the vill or place where the cause of action was laid in the declaration; and therefore some of the jury were obliged to be returned from the hundred in which such vill lay; and if none were returned, the array might be challenged for defect of hundredors. This was supposed to qualify those who composed the jury for forming a proper judgment of the evidence adduced, as they were supposed to know beforehand the characters of the parties and witnesses. But this convenience was overbalanced by another very natural and almost unavoidable inconvenience; that juries coming out of the immediate neighbourhood, would be apt to intermix their prejudices and partialities in the trial of rights. This our law has been so sensible of, that for a long time it has been relinquishing this practice; the number of necessary hundredors in the whole panel, which in the reign of Edward III. were constantly *six*, being in the time of Fortescue reduced to *four*. Afterwards, indeed, the statute 35 Hen. VIII. c. 6. restored the ancient number of *six*, but that clause was soon virtually repealed by statute 27 Eliz. c. 6. which required only *two*. And sir Edward Coke also (1 Inst. 157.) gives us such a variety of circumstances, whereby the courts permitted this necessary number to be evaded, that it appears they were heartily tired of it. At length by statute 4 & 5 Ann. c. 16. it was entirely abolished upon all civil actions except upon penal statutes; and upon those also, by the 24 Geo. II. c. 18. the jury being now only to come *de corpore comitatus*, from the body of the county at large, and not *de vicinato*, or from the particular neighbourhood. See **ARRAY** and **CHALLENGE**.

HUNDREDER is also used for him who hath the jurisdiction of a hundred, and holds the hundred-court. See **HEADBOROUGH**.

Sometimes it is also used for the bailiff of a hundred. See **BAILIFF**.

HUNDREDS, in the construction of reeds for weavers, denote the number of divisions in any given length of the reed. A thorough knowledge of the adaptation of yarn of a proper degree of fineness to any given measure of reed constitutes one of the principal arts of the manufacturer of cloth, as upon this depends entirely the appearance, and in a great degree the durability of the cloth when finished. The art of performing this properly is known by the names of *examining*, *setting*, or *fleying*, which are used indiscriminately, and mean exactly the same thing. The reed consists of two parallel pieces of wood of any given length, as a yard, a yard and quarter, &c. The divisions of the yard being into halves, quarters, eighths and sixteenths, the breadth of a web is generally expressed by a vulgar fraction, as $\frac{2}{3}$, $\frac{1}{2}$, $\frac{2}{3}$, &c. and the subdivisions by the eighths or sixteenths or *naids*, as they are usually called, as $\frac{2}{8}$, $\frac{3}{8}$, $\frac{1}{4}$, &c. or $\frac{1}{16}$, $\frac{1}{8}$, $\frac{1}{4}$, &c. In Scotland the splits of cane which pass between the longitudinal pieces or ribs of the reed are expressed by hundred porters or splits. The porter is 20 splits, or $\frac{1}{5}$ th of an hundred. In Lancashire, Cheshire, and the other manufacturing counties of England, the divisions of the reed are different. A comparative table of the differences by which they are reduced, to the same standard as nearly as is possible, that is to say, within one split or division by which the Scotch or English manufacturer may at one glance ascertain the relation which the other modes of counting reeds bear to his own, is annexed to this article. In counting reeds by the number of hundreds in a determinate length, which is com-

mon to the manufacturers of the continent, as well as to those of Scotland, different lengths are used for the standard of fineness. In that part of France situated around Cambrai, which is, or was, the principal seat of the cambric manufacture, the standard length of a reed, by which the fineness of the splits is ascertained, is 34 inches. In Holland, where the heavier fabrics of linen are chiefly produced, the standard of measure is 40 inches, and in Scotland the standard is 37 inches, or the Scottish ell. Now it is plain, that if 2000 or twenty hundred divisions or splits be contained in each of these respective measures, those which are contained in 34 inches must be finer and closer than those contained in 37, and still more so than those contained in 40. For the practical purposes of manufacture in this country it can be of little importance to ascertain with precision the relative proportions which these standards bear to each other, but to the wholesale purchaser it must be useful to have some correct idea of the mode by which both the value and quality of the commodity which he purchases may be ascertained with considerable precision merely by inspection.

In Lancashire and Cheshire a different mode is adopted both as to the measure and divisions of the reed. The Manchester and Bolton reeds are counted by the number of splits, or, as they are there called, dents contained in $24\frac{1}{2}$ inches of the reed. These dents, instead of being arranged in hundreds, porters, and splits, as in Scotland, are calculated by what is there termed *bars* or *bears*, each containing 20 dents, or the same number as the porter in the Scotch reeds. Formerly the number of dents in a *lare* was frequently 19, a number so ill calculated for any easy arithmetical calculation, that it is difficult to conjecture the causes which could have suggested its adoption, unless we suppose that the number 19, in place of 20, was adopted to leave room for the shrinking-in breadth when first immersed in any liquid, to which all newly woven cloth is liable. The Cheshire or Stockport reeds again receive their designation from the number of ends or threads contained in one inch, two ends being allowed for every *dent*, that being the almost universal number in every species and description of plain cloth, according to the modern practice of weaving, and also for a great proportion of the fanciful articles. The number of threads in the warp of a web is generally ascertained with considerable precision by means of a small magnifying glass fitted into a socket of brass, under which is drilled a small round hole in the bottom plate of the standard, the number of threads visible in this perforation ascertaining the number of threads in the standard measure of the reed. Those used in Scotland have sometimes four perforations over any one of which the glass may be shifted. The first perforation is $\frac{1}{4}$ of an inch in diameter, and is therefore well adapted to the Stockport mode of counting, that is to say, for ascertaining the number of ends or threads per inch. The second is adapted for the Holland reed, being $\frac{1}{5}$ th part of 40 inches. The third is $\frac{1}{5}$ th of 37 inches, and is adapted for the now almost universal construction of Scotch reeds, and the fourth, being $\frac{1}{5}$ th of 34 inches, is intended for the French cambrics. Every thread appearing in these respective measures, of course, represents 200 threads or 100 splits in the standard breadth, and thus the quality of the fabric may be ascertained with considerable precision, even after the cloth has undergone repeated washings, either at the bleaching ground or dye work. By counting the other way, the proportion which the wool bears to the warp is also known, and this forms the chief use of the glass to the manufacturer and operative weaver, both of whom are previously acquainted with the exact measure of the reed.

Compara-

Comparative Table of 37-inch reeds, being the standard used throughout Europe, for linens, with the Lancashire and Cheshire reeds, and the foreign reeds used for Holland and cambric.

| Scotch. | Lancashire. | Cheshire. | Dutch Holland. | French Cambric. |
|---------|-------------|-----------|----------------|-----------------|
| 600 | 20 | 34 | 550 | 653 |
| 700 | 24 | 38 | 650 | 761 |
| 800 | 26 | 44 | 740 | 870 |
| 900 | 30 | 50 | 832 | 979 |
| 1000 | 34 | 54 | 925 | 1089 |
| 1100 | 36 | 60 | 1014 | 1197 |
| 1200 | 40 | 64 | 1110 | 1300 |
| 1300 | 42 | 70 | 1202 | 1414 |
| 1400 | 46 | 76 | 1295 | 1464 |
| 1500 | 50 | 80 | 1387 | 1602 |
| 1600 | 52 | 86 | 1480 | 1752 |
| 1700 | 56 | 92 | 1571 | 1820 |
| 1800 | 58 | 96 | 1665 | 1958 |
| 1900 | 62 | 104 | 1757 | 2067 |
| 2000 | 66 | 110 | 1850 | 2176 |

In the above table the 37-inch reed is placed first. It is called Scotch, not because it either originated, or is exclusively used, in that country. It is the general linen reed of all Europe, but in Scotland it has also been adopted as the regulator of her cotton manufactures. In the table it is only compared with the nearest English reed actually in use, for in most cases there is some small difference, which, however, is not material for practical purposes. For the Holland and cambric reeds, the exact number of splits or dents is given merely for comparison, as these reeds are not at all used in Britain.

The art of proportioning the yarn to the reeds, for different fabrics, has been always regulated by the practical experience of the manufacturer, and the taste or fancy of his customers. Some attempts have been made to reduce it to a standard, and it is evidently a matter of no difficulty. Without analyzing particularly the plans which have been proposed, and the arguments for and against each of them, it seems that the following may, in general, be taken as a good approximation.

Every species of yarn used in the manufacture of cloth, may be assumed to be a cylindrical body of stuff of a certain diameter. Now as the area of every circle is as the square of its diameter, and as the cubical content of every cylinder is found by multiplying the area of its base by its height, we may reasonably infer, that if the diameter of a thread is squared, and that square multiplied by its length, it will give the solid content, and *vice versa*; that the square root of the number which ascertains the weight of yarn, is a symbol of its diameter. If this be granted, it follows, that when any particular denomination of yarn is found to produce a proper fabric of cloth when woven in a reed of any given dimension, the proper denomination for any other reed may be found. Or if the yarn is at hand, and the proper reed wanted, it may be found by exactly the converse of the former analogy. Upon this hypothesis the analogy will be

As the square root of the given yarn,
Is to the given dimensions of the reed;
So is the square root of another kind,
To the dimensions of the reed required.

But as few practical manufacturers or weavers are accustomed to the extraction of roots, the real description of the yarn may be taken, and the reed squared, or multiplied into itself, which will give exactly the same result. It may be necessary to observe, however, in this place, that as the fineness of cotton yarn is ascertained by progressive numbers; and that of most other kinds of yarn, by the weight of certain quantities, the proportion or analogy in the former case must be direct, and in the latter inverse, because a diminution of weight in a given quantity necessarily implies an increase of fineness. The two following examples will, it is hoped, render this sufficiently obvious.

If a manufacturer finds, by experience, that a fabric of goods, such as please his customers, is produced by weaving N. 60 of cotton yarn in a reed of 1200 by the linen or Scotch reed, and wishes to ascertain what description of yarn he ought to employ for a web to be woven in a 1500 reed; the proportion will be

As 144, the square of the 1200 reed,
Is to 60, the number of the given yarn,
So is 225, the square of the 1500 reed,

To 94, the nearest integral number by calculation.

In the converse he would find the square of the reed, and would still find extraction of the root necessary.

But if a manufacturer of linen finds that a fabric of yarn, of any number of ounces to the spindle, is well adapted to a 1200 reed, and wishes to ascertain the weight or denomination of yarn fit for a 1500 reed as before, his proportion must be inverted.

The chief objection which practical men are apt to make to the above theory of adaptation, which is perhaps the best that has hitherto been found, is the following. That in finer fabrics of goods it is not found to produce the desired effect, and that experience proves, that were a practical manufacturer of cloth to adopt this rule implicitly, either his fine goods would be wanting in that show and elegance which is their chief recommendation, or that his coarse articles would be flimsy and deficient both in warmth and durability. Allowing to this objection, which is unquestionably well founded, in some respects, all the weight which it deserves, the answer to it is very easy. The chief recommendations of coarse goods are thickness and strength, those of fine goods lightness and elegance. These are not, nor can be regulated by any exact mathematical rule, as they are much dependent on fancy. No lady would expect, in a fine dress, the strength and durability of a sack, nor would any miller store his flour in a bag, possessing the principal requisites of a sieve. It is sufficient, if the manufacturer is enabled to obtain a fair proportion for the real fabric, and this he must afterwards vary, to suit his goods to the market for which they are intended.

HUNDSHUBEL, in *Geography*, a town of Saxony, in the territory of Erzgebirge; 23 miles S.S.W. of Chemnitz.

HUNDSMARCK, a town of the duchy of Stiria, on the Muehr; 14 miles W S.W. of Jadenburg.

HUNDSRUCK, a district of Germany, between the Rhine, the Moselle, and the Nahe; now a part of France.

HUNE, LA, a bay on the S. coast of Newfoundland; 90 miles E. of cape Ray.

HUNEFELD, a town of Germany, in the bishopric of Fulda; eight miles N.E. of Fulda.

HUNERWASSER, a town of Bohemia, in the circle of Boleslau; 10 miles N. of Jung-Buntzel.

HUNG-TEAP, a term applied in some districts to a small ram,

ram, in contradistinction to that of a *close-weep*, or one whose testicles are not come properly down into the cod. It is proper to attend well to these states of male sheep. See RAM.

HUNGARIAN MACHINE, in *Hydraulics*, is represented in *Plate XIII. Hydraulics, fig. 1.* In this figure, AA is the side of a hill close by the brink of the shaft or mine-pit BB, which is 104 feet deep below the surface of the ground C at the foot of the hill. In this hill is a large spring of water, 143 feet above the surface of the ground at C (taken in perpendicular measure) and the spring affords much more water than what the spring D, under ground, lets into the mine.

A pipe EFG lets the water down from the spring in the hill, into a close air-tight vessel H that stands at the foot of the hill, and contains $57\frac{1}{2}$ cubic feet, or 430 gallons in wine measure. In this pipe is a cock *a*, which being opened or shut, lets the water of the spring run into H, or stops it, as occasion requires: and in H are two cocks *b* and *c*, the uppermost of which is for letting air into H, and the lowermost for letting the water out of it.

A small pipe I goes from the vessel H on the surface of the ground to a vessel K, in the bottom of the mine, and terminates in the top thereof. The vessel is air-tight, and contains $27\frac{1}{2}$ cubic feet, or 205 gallons in wine measure, which is forced up the ascending pipe LM, and runs off to waste, at N, above ground. The lower end of this pipe goes down so far into the vessel K, as almost to touch its bottom.

From this vessel, a pipe O goes to the spring D under ground, which lets water into the mine, and would overflow it if the water was not forced up or raised from the mine through the pipe LM. The pipe O lets this water into the vessel K when the cock *d* is turned open, and keeps back the water when the cock is shut,

The operation is as follows: the cock *b* being open, and the cocks *a* and *c* shut, and no water in the vessel K, open the cock *d* to let the vessel K fill with water from the spring in the mine. As this vessel fills, the water will drive the air out of it, up through the small pipe I into the vessel H, and all that air will go out of the vessel H by the open cock *b*, and then H will remain, as it was before, full of air in the same state of density as the common air is on the outside of H. When K is full of water, shut the cocks *b* and *d*, and open the cock *a*, to let water run down from the spring in the hill by the pipe EF, into the vessel H. As the water rises in that vessel, the air will thereby be driven out of it, down through the pipe I, into the vessel K: and as this air is compressed by the weight of the running water in the pipe EF, the compressed air will force all the water out of the vessel K, up through the pipe LM, from which it will run off at N on the surface of the ground; and then the compressed air will rush out, after the water.

When the vessel K in the mine is emptied of water, and the air is heard to begin to rush out, shut the cock *a* to stop the water from the spring, and open the cocks *b* and *c*: then the water that came from the spring will run out of the vessel H by the cock *c*, and air will go in by the cock *b*: at the same time, open the cock *d* in the mine to let the vessel K fill with water from D the spring in the mine; and as H empties above-ground, K will fill below it; and the air that remained in K will (by the rising of the water in it) be driven back into the vessel H through the pipe I.

When H is empty of water, and K full, shut the cocks *b*, *c*, and *d*, and open the cock *a*: then H will fill with water from the spring in the hill; and this water, as it rises in H,

will force the air out of H, down the pipe I, upon the water in K; and the force of the compressed air will drive all the water out of K, up the pipe LM, from which it will run off at N, as before.

And thus, wherever there is a spring in a hill, near a mine that affords more water than what flows into the mine from a spring under-ground; and the perpendicular height of the spring in the hill is greater than the depth of the mine, water may be thus raised from the mine, in a most simple and easy manner by an engine in which there are neither pumps, pistons, nor valves: and such an engine will not be liable to be out of order, nor need repairs in many years.

But as there are very few mines that have hills near them with high springs, water cannot then be raised from them in this manner; and therefore Mr. Blakey proposed another method, which was, to make H an air-vessel, with a pipe going from it to another vessel in which is water, kept boiling by a fire under it, and this vessel to have a cock to let out the steam occasionally that rises from the surface of the boiling water. When the cock is shut, the steam will go off from the boiler into the air-vessel H, and drive the air out of it, down through the pipe I into the vessel K in the mine: and the force of the air compressed by the elasticity of the steam, will raise the water from K, up through the pipe LM, till K be emptied of water. Then the cock in the boiler is to be turned open, to let out the steam, and the cock *d* to be opened to let the vessel K fill from the spring in the mine; and when it is full, both these cocks are to be shut, and the operation will go on as before.

That Blakey's scheme would do, the Hungarian machine puts beyond all doubt. In both of them the vessels must be made very strong, because every part of each vessel, equal in surface to the bore of the ascending pipe LM, will sustain an outward pressure equal to the whole weight of water in that pipe. It will not answer for such depths as the common fire-engine will, nor will it raise so much water; but it may be built for less than a third part of the expence, and would answer very well where the depth is not above a hundred feet.

HUNGARIAN Music. There is no doubt (says Mr. Laborde) but that the Hungarians, in abandoning Asia, about the ninth century, in order to inhabit Europe, made use of Asiatic musical instruments during their first year's residence there.

These were almost all wind instruments; of which their names, that still retain their Hungarian appellations, and are of that kind, is a proof. As the trumpet, *buccina*, is called *kurt* in the Hungarian dialect, and the flute, *flp*, &c. Other instruments have names, derived from other languages, as *izimlalom* signifies cymbalum; *orgona organum*; *trombita tuba*. All these words are of Greek, Latin, or German extraction, whence we conclude that the Hungarians, in quitting Asia, had only wind-instruments. If they had had others, they would have had words to express them. We see likewise that the pike, the bow, arrow, and sabre, are the only arms of which the names are Hungarian, as these were the only arms which this people knew when they arrived in Europe: their other military weapons are expressed by foreign words.

Hungarian music remained in its pristine state of mediocrity till the reign of Corvinus, who was proclaimed king of Hungary at the age of 15, in 1458, and afterwards conquered the kingdom of Bohemia, and died at 47, in 1490.

This prince rendered Hungary equal to other countries in arts and sciences, by his patronage and by cultivating them himself. The pope's nuncio, who came to Buda in 1483.

to make peace between the emperor Frederic and Corvinus, in a letter to his holiness, says, "the fingers of this prince's chapel are the best of all those I have ever heard."

Music was cultivated with the same ease under king Ladislaus VI. and Lewis II., but not with the same pomp, the number of the musicians of the household was considerably diminished. It appears likewise by the state of music which is still preserved, that wind instruments have the precedence over all others.

The Hungarians, like all people not quite civilized, had tunes without time or key, to which they sung their coarse national ballads without harmony; however, though almost all uncultivated people love high tones and noisy music of a light and vulgar cast, the Hungarians preferred soft sounds and slow measures: which has rendered their music more of the feminine than the masculine gender. And we still see among the peasants who preserve their primitive manners longer than the higher orders of the people, that the girls assemble on great festivals, and sing in chorus odes and ancient poetry, which is never done by boys. Men, however, cultivated music: but it was only to celebrate the prowess of their ancestors in patriotic songs. It is related that in a repast given by Attila, the Enkefius, or director of the music, had a seat on the right hand of the throne; and that after the service two men sung verses composed in honour of Attila's victories. Part of the audience wept, and, adds the historian, the rest grew furious and desired to be led to battle. Two stanzas of these songs have been preserved in their original language, and in Latin, to the following purport.

"Let us ever remember those ancient domains,
Which our ancestors left when they flew
To a climate more mild, from the Scythian plains,
Where dread mountains of snow are in view.

"To Hung'ry they hasten'd, with God for their guide,
And chose Transylvania for home;
Be their force and their courage for ever our pride,
But, like them, let us ne'er again roam."

The knowledge of music was introduced into Hungary by the Christian religion and belles lettres.

As to the time when music was first in use at court, there appears, in a diploma granted by king Bela III. in 1192, that a person was sent to Paris of the name of Elvin, to learn the French melody.

It likewise appears in the Journals of the kings of Hungary, that the Hungarians, who came from Asia into Europe, brought to their new habitations the Asiatic manners, airs, dances, and songs; but that in process of time they cultivated the music and dancing of the neighbouring nations of Europe, till at length these two arts, practised by the sovereigns themselves, were held in great favour throughout the kingdom of Hungary. *Essais sur la Musique.*

HUNGARICA BOLUS, in the *Materia Medica*, a medicinal earth, commonly known by the name bolus Toccavensis.

HUNGARICUS MORBUS, or *Febris Hungarica*, the Hungarian disease, an epidemic and fatal fever, which originated in the camp of the emperor Maximilian II. in Hungary, in the year 1566, and spread through the greater part of Europe, causing every where a terrible mortality, and almost depopulating Vienna, where the returning army halted in order to recruit. In some instances it seems to have put on the form of a remittent fever; but in general was a severe and malignant typhus, resembling the hospital or goal fever. (See FEVER and TYPHUS.) Consult Sennert. lib. iv. cap. 14. De Morbo Hungarico. Ruland. De Lue Hungarica:—

Jordan, De Pestis phœnom. cap. 19. Pringle on Dis. of the Army, part iii. chap. 4. § 4.

HUNGARY, in *History and Geography*, a country of Europe, formerly regarded as an independent kingdom, is bounded on the north by Poland, from which it is separated by the Carpathian mountains, on the east by Transylvania and Wallachia, on the south by Slavonia, and on the west by Moravia, Austria, and Stiria. Many authors comprehend under the general name of Hungary, Slavonia, Dalmatia, Bosnia, Servia, Transylvania, Moldavia, and Wallachia. The ancient inhabitants of the western parts of Hungary were Pannonians, those of the northern Jazygians. The Romans reduced Pannonia, and kept it almost 400 years, till they were driven out by the Vandals, who held it till the year 395, when the Goths took possession of their settlements, who, in their turn, yielded to the Huns. In the year 883, the Huns, under the name of Hungarians, made another irruption into Pannonia, against the Bulgarians and Slavonians, whom they reduced. They had seven commanders, and Germany and many parts of Italy felt the effects of their savage ferocity. By degrees they became more civilized, and in the 10th century their prince Geysa embraced the Christian religion. His son Stevin was the first king of Hungary, and he completed the establishment of the Christian religion about the year 1000. He erected bishoprics, abbeys, and churches; annexed Transylvania as a province to Hungary, and at his death he was canonized. After him followed a succession of kings, natives of the country, of whom may be mentioned Andrew II. who conferred great privileges on the nobility, and even empowered them to oppose the king if he should attempt any thing hostile to the laws of the country. In 1342 Louis I., furnished the Great, subdued a part of Dalmatia, and carried his arms into Italy. He was succeeded by his daughter Mary, who was styled *King* of Hungary. She died in 1392, and the succession, which was some time controverted, at length terminated in the election of Sigismund, marquis of Brandenburg, who, in 1411, was chosen emperor of Germany. Albert of Austria, having married Elizabeth the heiress of Sigismund, was, with her, crowned king and queen of Hungary in 1438, an event which is said to form the earliest basis of the Austrian claim to the Hungarian monarchy. Upon the death of Albert, Ladislaus, king of Poland, was chosen king of Hungary, but perished in the battle of Werna against the Turks. The celebrated John Hunniades was appointed regent of the kingdom. In 1458 Matthias Corvinus, son of Hunniades, was proclaimed king of Hungary by the states, and in 1485 he seized Vienna, and the other Austrian states, and retained them till his death in 1490. Matthias was the most renowned prince that ever sat on the Hungarian throne: he was the friend and patron of letters, and founded a magnificent library at Buda, and furnished it with the best Greek and Latin books, and many valuable manuscripts. After repeated contests, the house of Austria again filled the throne of Hungary, in the person of Ferdinand, 1527, but towards the end of his reign the Turks seized the greater part of this kingdom. On his being chosen emperor of Germany, Ferdinand retained the crown of Hungary till 1563, when he resigned it to Maximilian his son; and it has since continued a constant appanage of the house of Austria. The grand duchy of Transylvania was considered as a part of Hungary till the year 1540, when it began to be regarded as a distinct state. Stephen Batori was elected prince of Transylvania in 1571, and his family held the sovereignty till 1602, after which it continued subject to several elective princes, of whom the most distinguished was Bethlem Gabor, a noble Hungarian and Calvinist, who conquered great part

of Hungary in 1619, and died in 1629. The last prince of Transylvania was Michael Abaffi, who gave up the sovereignty to the emperor in 1694, since which period this country has formed a part of the Austrian dominions. In the year 1722, in the diet of Presburg, the hereditary succession of Hungary was secured to the house of Austria, and in case of failure of male heirs, it was enacted that females should be capable of holding the crown. Such are the historical epochs of this country. With respect to its surface, it is mountainous and barren towards the north: the air is cold but healthy. Towards the Danube the soil is level and sandy, and the climate very temperate. In the south the marshes are hot, moist, and unwholesome. Hot days, with cold nights, and habitual intemperance, occasion diseases, particularly what is called the Hungarian fever. The level country bears abundance of corn, excellent fruit, and almost all kinds of vegetables. The forests are beautiful, and the meadows feed numerous herds of cattle. The sides of the mountains are covered with vines, and in their bowels are found all kinds of metals and mineral substances. The chief mountains are the Carpathian or Crapack: the principal rivers are the Danube and Drave. The Hungarians and Slavonians are regarded as the only native inhabitants, though the Croats, Ruffians, Walachians, Vandals, Greeks, Jews, and Turks, likewise abound. Protestants are more numerous than Roman Catholics. Hungary is governed by the king and states: the latter are divided into four classes; to the first belong the prelates and other high orders of the church: to the second class belong the great barons, bans, or viceroys: to the third class belong the gentry, and to the fourth the royal free cities. Upon every view of the subject there appears to be between seven and eight millions of inhabitants, which are about one-third of the population of the Austrian dominions, and it yields about one-fifth of the whole revenue. The annual exports are equal in value to 1,600,000*l.* sterling, and its imports to little more than a million. The standing military force amounts to nearly ninety thousand men. Presburg is the capital. The Hungarians are tinged with the manners of the Germans, but they remain a spirited people, and affect to despise their masters. The nobility are numerous, well informed, and warlike. Their lands owe their sovereigns no service. The peasant possesses nothing, he can be nothing but a farmer, and the proprietor can dismiss him at his pleasure. Anciently the peasants might change their masters; they cannot do so now: they once had particular tribunals to which they might have recourse, but this privilege is no longer allowed. The Hungarian dress is well known to be peculiar, and is copied by our hussars. This dress, consisting of a tight vest, mantle, and furred cap, is graceful; and the whiskers add a military ferocity to the appearance. The languages spoken are numerous and discrepant: they belong chiefly to three grand divisions; the Gothic or German; the Slavonic; and lastly, the Hungarian proper, which has been considered as a branch of the Finnic.

HUNGARY-Town, a post-town of America, in Lunenburg country, Virginia; 215 miles from Virginia.

HUNGARY Water, Aqua Hungarica, a distilled water, so denominated from a queen of Hungary, for whose use it was first prepared, and who was cured by the continued use of it, of a paralytic disorder.

Hungary-water is one of the distilled waters of the shops; and is directed in the college dispensatory, to be made of rosemary flowers infused some days in rectified spirit of wine, and the spirit then distilled. The college of Edinburgh directs a gallon of rectified spirit to be drawn over in the heat of a water-bath from two pounds of the flowers as soon

as they are gathered; that of London takes the tops and a spirit not quite so strong; putting a gallon of proof spirit to a pound and a half of the fresh tops, and drawing off in the heat of a water-bath five pints.

It is an agreeable perfume, and its virtues are much the same as those of the simple it is drawn from. The Hungarian water brought from France is more fragrant than such as is generally prepared among us.

HUNGEN, in *Geography*, a town of Germany, in the circle of the Upper Rhine, and county of Solms-Braunfels; 14 miles S.E. of Wetzlar.

HUNGER, FAMES, a natural appetite or desire for food. For the symptoms, proximate cause, &c. of hunger, see *DIGESTION*. See also *ABSTINENCE, BULIMY, DIET, &c.*

HUNGER, in *Biography*, in 1772 organist of the Duomo, or Frauen-Kirche, at Dresden, of which church the organ was built by Silberman, and is regarded as one of the largest and most complete in Germany. The longest pipe in the pedals is 32 feet, and there are 48 stops.

Though M. Hunger possessed neither great fancy nor finger, his performance was truly masterly, and manifested a perfect knowledge of his instrument.

HUNGER Creek, in *Geography*, a stream which supplies the water-machinery in the new and thriving manufacturing town of Hamilton, between Albany and Schenectady.

HUNGER Rot, the name of a morbid affection in sheep, which is commonly produced by poor stunted keep, especially in the winter season. It is known with facility by the peculiar appearance of the sheep, which becomes extremely thin, lean, ragged, and emaciated. The principal means of restoring such animals, are those of changing them to drier pastures, and the gradual introduction of them into those of richer and better kinds. See *ROT*.

It is sometimes termed the hunger, or hungry evil.

HUNGERFORD, in *Geography*, is a market-town and parish, situated principally in the hundred of Kintbury Eagle, in the county of Berks, England, though a considerable part of the parish is in the hundred of Kinwardstone, in the adjoining county of Wilts. The town stands on the banks of the river Kennet, near the road from London to Bath. Its ancient name, according to Camden, was Ingleford-Charnam-street; which Gough supposes to be a corruption from the ford of the Angles on Herman-street; a Roman road that crosses the town, the name of which appears to be yet preserved in one of its avenues, called Charman-street. The name of Hungerford, as now spelt, occurs in a record of the year 1204. At some distance west of the town is the church, an ancient structure, which appears to have been erected at different periods. It contains some old monumental memorials to the family of Hungerford, who derived their name and origin from this town. The civil government of Hungerford is vested in a constable, who is assisted in the execution of his office by twelve feoffees and burgesses, a bailiff, steward, town-clerk, &c. The market, which is on Wednesdays, has been held from time immemorial; it is mentioned as an established market in a record dated 1297. The market-house and shambles, which were erected in 1787, are roomy and commodious. Over the latter is a large room, used as a town-hall, for the dispatch of public business. In this room is deposited a curious relic of antiquity, denominated the Hungerford-horn, given, with an extensive right of fishery, by John of Gaunt to the inhabitants of the town. Here are three annual fairs. The town, by means of its canal navigation, has a considerable traffic; but no established manufactures. Hungerford is 64 miles from London: in the year 1801 it contained 454 houses, and 2292 inhabitants. At a short distance S.E. of the town is

Hungerford-park, the property of John Willes, esq. who purchased it of Mr. Dalbiac in the year 1796, since which time several improvements have been made to the house. Lysons's "Magna Britannia," vol. i. Beauties of England, vol. i.

HUNGERFORD, a township of Upper Canada, in the county of Hastings, lying in the rear and N. of the Mohawk tract. — Also, a township in Franklin county, Vermont, containing, in 1790, 40 inhabitants; 7 miles S. of the Canada line, and 14 E. of lake Champlain.

HUNGRY EVIL, a term used among the farriers for the fame distemperature in horses, which in men we call a canine appetite. It manifests itself sufficiently in an inordinate desire to eat, and is sometimes the effect of long starving, sometimes of cold, or some other internal or external cause. In the latter case the horse not only eats a large quantity, but he devours it in a very remarkable manner, chopping it up, as if he would eat the very manger. The method of cure is to give him large toasts of bread, steeped in sack, or some other sweet wine; or give him a quantity of wheat flour in wine, or in milk, a quart or more at a time. These are very good remedies in case of extremity, but otherwise he may be cured by feeding him moderately with bean-bread several times a-day, allowing no other food.

HUNGRY Hill, in *Geography*, a high mountain in the county of Cork, Ireland, on the north side of Bantry bay, which is a remarkable landmark, and on which some alpine plants have been found, as *salix herbacea*, *empetrum nigrum*, &c. A fine cataract falls from it, especially after heavy rain.

HUNGRY Point, a cape on the E. coast of the island of St. Vincent. N. lat. $13^{\circ} 28'$. W. long. $61^{\circ} 11'$.

HUNGTONG, a town of Meckley; 35 miles S.E. of Munnypour.

HUNINGUE, a town of France, in the department of the Upper Rhine, and chief place of a canton, in the district of Altkirch, situated on the Rhine; 14 miles E. of Altkirch. The place contains 774, and the canton 13,089 inhabitants, on a territory of 140 kilometres, in 23 communes.

HUNNARYD, a town of Sweden, in the province of Smaland; 18 miles S.W. of Jonkioping.

HUNNEINE, a town of Algiers, near the coast; 10 miles N.N.W. of Tackumbrect.

HUNNERIC, in *Biography*, king of the Vandals, in Africa, succeeded his father Genseric in 477. He was a violent Arian, and though he at first gave his opponents toleration, he afterwards commenced a persecution against them, which, for savage barbarity, is said to have exceeded the persecutions under the heathen emperors. He died in 484.

HUNNIADES, JOHN CORVIN, one of the most considerable captains of his age, who contended with and defeated the Turks in 1442 before Belgrade and in Transylvania. When the peace which succeeded was violated by the Hungarians, Hunniades accompanied Uladislaus to the battle of Varna in 1444, in which the Christian army was entirely defeated, with the death of the king. Hunniades drew off the remainder of the forces, and by his vigour put himself in a condition to act offensively with success against the Turks. He was declared governor of Hungary for the minor king Ladislaus, then educating at the court of the emperor Frederic, who refused to give him up to the ambassadors of the nation. For a considerable time he was a terror of the Turks, but was at length defeated by them in 1448. In 1456 he compelled Mahomet II. to raise the siege of Belgrade. At this time Ladislaus, who had been restored to his subjects, fled in alarm to Vienna, and the hostile torrent would have been irresistible, had not Hunniades, after de-

feating a Turkish fleet on the Danube, thrown himself into Belgrade. Capistran, a monk, by his success in preaching a crusade, was instrumental in bringing him large reinforcements; by the aid of which Mahomet was repulsed with great slaughter. Not long after this glorious success, Hunniades was seized with a fever, of which he died, at Zemlin, in September 1456, regarded as the hero of Christendom. Univ. Hist. Moreri.

HUNNIUS, GILES, a Lutheran divine, was born at Winende, in the duchy of Wirtemberg, in 1550. He was educated at Tubingen, and became professor of divinity at Marpurg, from whence he removed to Wirtemberg. In these situations his zeal for Lutheranism led him to act in a manner that reflects much infamy on his memory. He established a kind of inquisition which deprived many persons of their employments, and drove them from their country. If they refused to sign a formulary dictated by Hunnius and his colleagues, they were instantly regarded as Calvinists, and found no mercy. Hunnius, after a series of atrocious persecutions, died in 1603, in the 53d year of his age. He was a man of considerable learning and abilities, but bigotted and intolerant. He was author of many controversial pieces: also of commentaries on the gospels; homilies, &c. His most celebrated work is entitled "Calvinus, Judaizans, &c." in which, says Bayle, Calvin was accused of so many heretical crimes that he might have been afraid of being treated like Servetus, had he lain at Hunnius's mercy. His works have been collected and published in five volumes, folio. Bayle.

HUNNOVER, in *Geography*, a town of Hindooftan, in Mysore; 13 miles E.N.E. of Cheneroypatam.

HUNS, in *Ancient Geography* and *History*, one of the northern nations, which, under the reign of Valens, threatened the empire of Rome, had been formidable, in a much earlier period, to the empire of China. Their ancient, perhaps their original seat, was an extensive, though dry and barren, tract of country, immediately on the north side of the great wall. These narrow limits, however, were extended by their valour; and their rultic chiefs, who assumed the appellation of "Tanjou," gradually became the conquerors and the sovereigns of a formidable empire. Towards the east, their victorious arms were stopped only by the ocean; and the tribes, which are thinly scattered between the Amoor and the extreme peninsula of Corea, adhered with reluctance to the standard of the Huns. On the west, near the head of the Irtish, and in the valleys of Imaus, they found a more ample space, and more numerous enemies. One of the lieutenants of the Tanjou subdued, in a single expedition, 26 nations; and the Igours, or Vigours, distinguished above the Tartar race by the use of letters, and consisting of three classes, of hunters, shepherds, and husbandmen, were in the number of his vassals. On the north, the ocean was the limit of the power of the Huns. The pride of the Tanjou might be flattered by the submission of so many distant nations; but the valour of the Huns fought the richer recompence of the wealth and luxury of the empire of the south. In the third century before the Christian era, a wall of 1500 miles in length was constructed in order to defend the frontiers of China against the inroads of the Huns; but this was an insufficient defence to an unwarlike people. The cavalry of the Tanjou frequently consisted of two or three hundred thousand men, formidable by the matchless dexterity with which they managed their bows and their horses; by their hardy patience in supporting the inclemency of the weather; and by the incredible speed of their march, seldom checked by torrents or precipices, by the deepest rivers, or by the most lofty mountains. They spread

spread themselves over the face of the country; and notwithstanding the elaborate tactics of the Chinese, directed in their operation by the emperor Kaoti, whose merit had raised him to the throne, were constrained to surrender to the victorious arms of the barbarians, B. C. 201. The successors of Kaoti, whose lives were dedicated to the arts of peace, or the luxury of the palace, submitted to a more permanent disgrace, and to purchase a temporary and precarious peace by the regular payment of a tribute of money and silk. Besides, a select band of the fairest maidens of China was annually devoted to the rude embraces of the Huns; and the alliance of the haughty Tanjous was secured by their marriage with the genuine or adopted daughters of the imperial family, which vainly attempted to escape the sacrilegious pollution. At length, however, the pride of the Huns was humbled, and their progress checked by the arms and policy of Vouti, the fifth emperor of the powerful dynasty of the Han. (B. C. 141—87.) Intimidated by the arms, or allured by the promises of Vouti and his successors, the most considerable tribes of the east and of the west disclaimed the authority of the Tanjou. (B. C. 70.) The Tanjou was compelled to renounce the dignity of an independent sovereign, and the freedom of a warlike and high-spirited nation. From this period the monarchy of the Huns gradually declined, till it was broken, by civil dissension, into two hostile and separate kingdoms. (A. D. 48.) One of the princes of the nation was urged, by fear and ambition, to retire towards the south with eight hords, which composed between forty and fifty thousand families. He obtained, with the title of Tanjou, a convenient territory on the verge of the Chinese provinces; and his constant attachment to the service of the empire was secured by weakness and the desire of revenge. From the time of this fatal schism, the Huns of the north continued to languish about 50 years, till they were oppressed on every side by their foreign and domestic enemies. The Sienpi, a tribe of oriental Tartars, retaliated the injuries which they had formerly sustained; and the power of the Tanjous, after a reign of 1300 years, was utterly destroyed before the end of the first century of the Christian era. (A. D. 93.) The era of the Huns is placed, by the Chinese, 1210 years before Christ, but the series of their kings does not commence till the year 230. About this period more than 100,000 persons of the poorest condition, and most pusillanimous temper were contented to remain in their native country, and to mingle with the victorious nation of the Sienpi. Fifty-eight hords, consisting of about 200,000 men, ambitious of a more honourable servitude, retired towards the south, and were permitted to inhabit and to guard the extreme frontiers of the province of Chanfi and the territory of Ortous. But the most warlike and powerful tribes of the Huns maintained, in their adverse fortune, the undaunted spirit of their ancestors; and resolved to explore the western world, and discover some remote country, inaccessible to the arms of the Sienpi, and to the laws of China. In the course of their emigration they soon passed the mountains of Imaus and the limits of the Chinese geography. Of these formidable exiles two divisions directed their march towards the Oxus, and towards the Volga. The first of these colonies established their dominion in the fruitful and extensive plains of Sogdiana, on the eastern side of the Caspian, where they preserved the name of Huns, with the epithet of Euthalites, or Nephthalites. Their manners were softened, and even their features were improved, by the mildness of the climate, and their long residence in a flourishing province, which might still retain a faint impression of the arts of Greece. These *white* Huns, a name which they derived from the change

of their complexion, soon abandoned the pastoral life of Scythia, and though their vicinity to the provinces of Persia involved them in frequent contests with the power of that monarchy, they respected, in peace, the faith of treaties; and, in war, the dictates of humanity. The *second* division of their countrymen, the Huns, who gradually advanced towards the north-west, were exercised by the hardships of a colder climate, and a more laborious march. Their independent spirits soon rejected the hereditary succession of the Tanjous; and while each hord was governed by its peculiar murfa, their tumultuary council directed the public measures of the whole nation. As late as the 13th century, their transient residence on the eastern banks of the Volga was attested by the name of Great Hungary. (See HUNGARY.) A chasm occurs in their history after these Huns of the Volga were lost in the eras of the Chinese, and before they appeared to those of the Romans, which is not easily filled up. There is reason, however, to apprehend, that the same force which had driven them from their native seats, still continued to impel their march towards the frontiers of Europe. The Huns, whose martial spirit had not been impaired by a long residence in China, with their flocks and herds, their wives and children, their dependents and allies, were transported to the coast of the Volga; and they boldly advanced to invade the country of the Alani, a pastoral people who occupied, or wasted, an extensive tract of the deserts of Scythia. (See ALANS.) The Huns united with the Alani in their invasion of the Gothic empire. (A. D. 375.) The numbers, the strength, the rapid motions, and the implacable cruelty of the Huns were felt, and dreaded, and magnified by the astonished Goths, who beheld their fields and villages consumed with flames, and deluged with indiscriminate slaughter. To these real terrors they added the surprise and abhorrence which were excited by the shrill voice, the uncouth gestures, and the strange deformity of the Huns. These savages of Scythia were compared (and the picture had some resemblance) to the animals who walk very awkwardly on two legs; and to the mis-shapen figures, the "Termini," which were often placed on the bridges of antiquity. They were distinguished from the rest of the human species by their broad shoulders, flat noses, and small black eyes deeply buried in the head; and as they were almost destitute of beards, they never enjoyed either the manly grace of youth, or the venerable aspect of age. A fabulous origin was assigned to them, worthy of their form and manners; that the witches of Scythia, who, for their foul and deadly practices, had been driven from society, had copulated in the desert with infernal spirits; and that the Huns were the offspring of this execrable conjunction. The Goths greedily embraced the tale, and were the more easily induced to exert themselves in repelling the invasion of such enemies. (See GOTHS.) Such is the character, with the addition of many other particulars, which Ammianus Marcellinus and Jornandes give of these Scythian and Sarmatian Huns, who anciently inhabited that part of Asiatic Sarmatia, which bordered on the Palus Mæotis and the Tanais, the ancient boundary between Europe and Asia. They are represented as the most savage and cruel of all the barbarous nations. Their cheeks were mangled and countenances distorted in their earliest infancy, with a view, in maturer age, of striking terror into their enemies. They lived in the open air, without house or even huts, and subsisted upon roots and raw meat; and inured themselves, in the woods and on the mountains which they inhabited, to every kind of privation and hardship. They were accustomed to eat and to sleep on horseback, scarcely ever dismounting; and they covered their nakedness with goat-skins, or the skins

of a sort of mice sewed together. They had no law, nor any kind of religion; nor did they observe any distinction between good and evil, or submit their inclinations and passions to any kind of restraint. In war, they began the battle with great fury and a hideous noise; but after the first onset, their fury abated and they fled, when resisted, in the greatest confusion. They were notoriously faithless, so that they disregarded the most solemn treaties. Sometimes they made incursions into the Roman empire in defiance of the most sacred oaths and engagements; and at other times they joined the Romans in fighting against the Goths, and other barbarous nations. They have fought against each other when they had prospect of gaining any advantage to themselves by such conduct. Of their disposition in this respect, Justinian was so fully apprised, that by promising a large sum to the Uturgurian Huns, who inhabited the south side of the Palus Mæotis, he prevailed upon them to fall upon the Cuturgurians, another tribe, which had occupied the territory north of the others, towards the Tanais. Their form of government was not strictly monarchical; but they were headed and conducted by some of their chiefs. It was about the year 376 that they entered the country of the Alans, and, obliging those who survived their cruelty to enlist under their standard, fell upon the Goths, called by Ammianus Greuthongi, and by Jornandes Ostrogoths, and drove them out of their country. The Visigoths were afterwards treated in the same manner. The Gothic nations, alarmed by the sudden and unexpected irruptions of the Huns, determined to abandon their territories, and to seek shelter within the Roman dominions, separated by the Danube from the countries which had been over-run by the Huns. Upon submissive application to Valens, the Goths were admitted into Thrace, and their number was so considerable, that Ammianus compares them to the sparks which at that very time issued out of Mount Ætna, and to the sands of the Libyan shore. Thus the Huns, in the year 376, not only settled in Europe, but made themselves masters of that immense country, which extends from the Tanais to the Danube, and which, before their arrival, was possessed by the Alans, the Goths, and several other barbarous nations, whom they either drove out, or forced to submit to their victorious arms. In the year 388 many of the Huns, who had settled in Europe, were induced by large sums to enlist under the Roman banner of Theodosius I., who was then emperor, and they were thus prevented from raising disturbances on the frontiers of the empire. In 391 they passed the Danube, and being joined by the Goths and other barbarians, committed dreadful havoc in Mœsia and Thrace; but their progress was restrained by the vigorous and successful attack of Stilicho. About four years after, *viz.* in 395, the Huns made an unexpected inroad into the eastern provinces, and penetrated as far as Antioch, destroying the country with fire and sword, and committing every where deplorable cruelties. Having over-run and plundered several provinces, they voluntarily returned home, loaded with spoils, and carrying with them an incredible number of captives. After this irruption they remained quiet for nine years, or till the year 404, when passing the Danube in great multitudes, they entered Thrace, and having traversed that province, penetrated into East Illyricum, committing wheresoever they went dreadful ravages. In the following year great numbers of them entered the Roman service, and joined Stilicho's army, in its march against Radagaisus, who had invaded Italy. They were led by Uldin, one of their chiefs, and contributed to the victory gained by Stilicho in Etruria; but in two years after the signal victory, obtained chiefly by his means over Radagaisus, Uldin became an irreconcilable enemy to the Romans; and passing the Danube,

entered Thrace at the head of a numerous army; but having offended some of his principal officers, who joined the Romans, he was forced to recross the Danube after having lost many of his men. From this period the Huns seem to have continued quiet till the year 423, when, upon the death of the emperor Honorius, John, his chief secretary, assumed the purple, and the celebrated Aetius (*see his article*) was prevailed upon to espouse the cause of the usurper. Aetius engaged 60,000 Huns to march to the assistance of the new emperor; but hearing of his death, the prudent leader submitted to Theodosius, and persuaded the Huns, not without distributing among them considerable sums, to return home. Soon after this event, which happened in 423, we find the Huns in possession of Pannonia. As they were much indebted to Aetius for the lands they held in this country, Roas, their chief or king, received this able commander with the greatest demonstrations of kindness and friendship, upon his being disgraced at the court of Placidia, mother of Valentinian III. and sent him back at the head of a powerful army of Huns, which so terrified Placidia, that she restored Aetius to all his employments, and raised him to the rank of patrician. In 435 a strong body of Huns marched through Germany and Gaul, and joined Aetius against the Burgundians, who, having been allowed to settle in that part which bordered on the Rhine, had revolted from the Romans, and ravaged Belgic Gaul. On this occasion 20,000 Burgundians, with their commander Gondaciacus, were cut off. Soon after the Burgundians marched against the Huns, and surprising them when they were left destitute of a leader, by the sudden death of Uptar, their king, destroyed 10,000 of them, and obliged the survivors to save themselves by a precipitate flight. The Huns, notwithstanding this defeat, marched either in the same or the following year to the assistance of the Romans against the Goths, who had been allowed to settle in Aquitain, but who, not contented with the territory allotted them, had taken possession of several cities belonging to the Romans, and had laid siege to Narbonne. The Huns, having in the preceding year signalized themselves against the Goths in Armorica, marched against the Goths of Aquitain. In 425 Rouas, or Roas, king of the Huns, concluded a peace with Theodosius II., of which one of the conditions was, that the emperor should pay him a yearly pension of 350 pounds weight of gold. Soon after Rouas died, and was succeeded by his two nephews, Bleda and Attila. For the principal events that occurred under the reign of Attila, we refer to his biographical article. With the death of Attila the empire of the Huns is said to have terminated: for after this event they were so weakened by intestine wars and by the irruptions of the Gepidæ and Goths, that they continued quiet till the year 466, when passing the Danube on the ice, they made an incursion into Dacia, and committed dreadful ravages in that country. But their progress was interrupted by Anthemius the Roman commander, and in a pitched battle they were totally defeated. The Huns, dispirited by their losses and the death of their leader, were not in a condition to molest either the Romans or their neighbours for about 60 years. In 526 Boarex, queen of the Huns, took part with the Romans against the Persians, and led to the assistance of the emperor Justinian an army of 100,000 men, and obtained a victory, in the 13th year of Justinian's reign. The Huns, passing the Danube in great multitudes, laid waste Thrace, Greece, Illyricum, and all the provinces from the Ionian sea to the suburbs of Constantinople; and having crossed the Hellespont, extended their ravages to Asia, whence, after practising unheard-of cruelties, they returned home loaded with an immense booty. Justinian, in order to keep them quiet, allowed them some lands in Thrace, and agreed

agreed to pay them an annual pension, upon their promising to serve when wanted in the Roman armies. These were the Cuturgurian Huns; the Uturgurians retired with their booty to their own country bordering on the Euxine sea, and enlarged their territory by encroaching on that of their neighbours, without giving any further molestation to the Romans. But the Cuturgurians, notwithstanding the pension annually paid them by the emperor, made several inroads into the neighbouring provinces. Whilst they were busily plundering the provinces lying on the Danube, the Uturgurians, at the instigation and bribe of the emperor, fell upon them unexpectedly, defeated them with great slaughter, obliged them to quit their booty, and drove them entirely out of the empire. In a few years after, *viz.* A. D. 558, the Cuturgurian Huns, availing themselves of the frost, passed the Danube, and laid waste a great part of Mysia and Thrace; but whilst they were pursuing their ravages, they were put to flight by the aged Belisarius, and by an youth of great promise, called Germanus. The next event in which the Huns were concerned was the war that took place between the two tribes of the Uturgurians and Cuturgurians, and which, after lasting many years, hastened their destruction. In the reign of Charles the Great the Huns were masters of Dacia, New Transylvania, and Walachia; of Upper Moesia, New Servia, and of the two Pomeranias, namely, the Upper containing the present provinces of Carniola, Carinthia, and the greater part of Austria: and the Lower, comprising Bosnia, Sclavonia, and that part of Hungary which lies beyond the Danube. In the year 776, two princes of the Huns sent ambassadors to Charles, while he was in Saxony, desiring his friendship and alliance. But as they proved unfaithful by entering into an alliance with Tassilo, duke of Bavaria, the enemy of Charles, he raised two armies, which, in 794, laid waste the territories of the Huns, burnt their villages, and took several of the strong holds to which they had fled for security. In the space of eight years, this warlike nation was entirely subdued, and almost wholly extirpated. The entire reductions of the Huns happened, according to the best chronologers, in the year 794. Some authors assert that by this long war the whole race of the ancient Huns was cut off; and that the country was afterwards peopled by the neighbouring nations, to whom the present Hungarians owe their origin. *Anc. Un. Hist.* vol. xvii. *Gibbon's Rom. Emp.* vol. iv. v. vi.

HUNT, JEREMIAH, in *Biography*, was born in London in 1678. He was educated under Mr. Thomas Rowe, and after he had finished his course with him, he went first to Edinburgh and then to Leyden; at the latter place he applied himself most diligently to the study of the Hebrew language and the Jewish antiquities. In Holland he preached to a small English congregation, and upon his return he officiated some time at Tunstead, in Norfolk, from whence he removed to London about 1710, and was appointed pastor of the congregation at Pinner's hall. In 1729 the university of Edinburgh conferred on him the degree of D.D. He died in the year 1744. He was author of several single sermons; and likewise of "An Essay towards explaining the History and Revelations of Scripture in their several Periods, to which is annexed a Dissertation on the Fall of Man." After his death four volumes of his "Sermons," with tracts, were published, to which was prefixed Dr. Lardner's Funeral Sermon for him: to this the reader is referred for farther particulars.

HUNT, MRS. ARABELLA, a lady much celebrated the latter end of the 17th century, for her beauty, fine voice, and musical talents. Congreve has left a rapturous and extatic ode on her performance, which, if not seraphically ex-

quisite, his verses must be the most *mendacious*, that is, the most *poetical*, that ever were written. It seems the most animated of all the author's fugitive pieces; and we should suppose that he felt strongly what he so warmly describes.

If matters of fact in our biographical articles were not more our business than amusement of our readers, we should insert this whole poem, as it surpasses in intelligible panegyric all that ancient poets have said of the miraculous powers of Orpheus, Amphion, or Linus. We cannot help giving the first strophe as a specimen of auricular rapture.

On Mrs. Arabella Hunt singing,

" Let all be hush'd, each softest motion cease,
Be every loud tumultuous thought at peace,
And every ruder gasp of *breath*
Be calm as in the *arms* of death.

" And thou most fickle, most uneasy part,
Thou restless wanderer, my heart,
Be still; gently, ah, gently leave,
Thou busy idle thing, to heaven.
Stir not a pulse, and let my *blood*,
That turbulent unruly flood,
Be softly staid.

" Let me be all, but my attention, dead.
Go, rest, unnecessary springs of life,
Leave your officious toil and strife,
For I would hear her voice, and try
If it be possible to die, &c."

Whether this fire was a professional singer, or a lady, does not appear; she was contemporary with Purcell, and gained her musical fame chiefly by her admirable performance of his compositions. She taught the princess Anne of Denmark to sing; and was in such favour with queen Mary, that she bestowed on her an employment in the household, for the sake of having her near her person, and was frequently entertained by her performance in private, even in singing to her majesty common popular songs and ballads.

Old Mr. Gostling of Canterbury, used to relate a story which he had from his father, (one of the priests of the chapel royal, subdean of St. Paul's in the time of Charles II. and in the reign of king William, a favourite singer at court,) that queen Mary having expressed herself warmly in favour of the old Scots tune of "Cold and raw the wind doth blow," Purcell made it a perpetual base to an air in the next birth-day ode, 1692; beginning "May her blest example chafe:" a piece of pleasantry occasioned by her majesty asking for this tune, after he, (Gostling,) and Mrs. Arabella Hunt, with Purcell to accompany them on the harpsichord, had exerted all their talents and abilities to amuse so great a personage with compositions which they mistakenly thought of a superior class.

Mrs. Hunt died in 1705, when Congreve, under her picture playing on the lute by sir Godfrey Kneller, furnished the following lines, which in his works are called an epigram.

" Were there on earth another voice like thine,
Another hand so blest with skill divine;
The late afflicted world some hopes might have,
And harmony retrieve thee from the grave."

HUNTEBURG, in *Geography*, a town of Westphalia, in the bishopric of Osnabruck, situated on the river Hunte, which rises in the Dummer see, and runs into the Weser, about 20 miles N.E. of Oldenburg; 18 miles N.E. of Vorden.

HUNTER, WILLIAM, M. D. in *Biography*, an eminent anatomical teacher and physician, was born on the 23d of
May,

May, 1718, at Kilbride, in the county of Lanerk, in Scotland. His father, John Hunter, was descended from the family of Hunter of Hunterstown, and resided on a small estate, called Long Calderwood, in the parish of Kilbride. William, the seventh of ten children, was of a quiet and diligent disposition, and was sent to the university of Glasgow, at the age of fourteen, as a student of divinity. But after a sedulous study of theology, he conceived a repugnance to the subscribing to the articles of the Scotch church; and in this state of mind becoming acquainted with Mr Cullen (afterwards the celebrated professor at Edinburgh), who had just settled in practice at Hamilton, he was led to give a preference to the profession of physic, and in 1737 went to reside with this excellent friend and preceptor, with the consent of his father. The three years which he passed at Hamilton, he often declared were the happiest in his life. Mr. Cullen and he entered into partnership, with this liberal agreement, that each of them should alternately pursue further improvement in some medical school. Hunter, in consequence, went to Edinburgh in November 1740, where he attended the winter course of lectures, and among others those of the first Dr. Alexander Monro. In the summer of 1741, he arrived in London, with a recommendation to Dr. James Douglas, who was at that time engaged in a great anatomical work on the bones, which he did not live to complete. He was desirous of engaging a young man of abilities and industry to assist him in his dissections, and being favourably impressed with the conversation of Mr. Hunter, invited him to reside in his family for that purpose, and also to superintend the education of his son. Dr. Cullen readily gave his assent to a change of plan so favourable to his friend's advancement; and his venerable father, then near his end, reluctantly consented; he died in October of the same year. Mr. Hunter was immediately enabled, by Dr. Douglas's friendly assistance, to enter himself as a surgeon's pupil at St. George's hospital, and as a dissecting pupil of Dr. Frank Nichols, an anatomist of considerable reputation. He pursued his dissections with such assiduity and success, that Dr. Douglas was at the expence of having several of his preparations engraved. But he soon had the misfortune to lose this generous friend, who died in April 1742. He continued, however, to reside with the doctor's family, and to pursue his studies with the same diligence: for while he was convinced that he must now depend upon his own exertions for professional success, he also began to feel a consciousness of his own powers. In the following year, 1743, he communicated to the Royal Society a paper "On the Structure and Diseases of articulating Cartilages," which was printed in their Transactions, vol. 42, and was admired for the ingenuity of the observations on a subject not much investigated before. He now determined to become a teacher of anatomy; but difficulties at first presented themselves, and he was discouraged by Dr. Nichols, who about that time declined giving lectures in favour of Dr. Lawrence. A circumstance, however, soon occurred, which called forth his abilities in this way. A society of navy-surgeons had engaged Mr. Samuel Sharpe to deliver to them a course of lectures on the operations of surgery, at an apartment which they had in Covent-Garden. Mr. Sharpe at this time declined the task, and Mr. Hunter was solicited to continue it, which he did so much to their satisfaction, that they requested him to extend his plan to anatomy: and in the winter of 1746, he began his course of anatomical lectures in their room. At first he experienced considerable solicitude in speaking in public; but at length his diffidence was overcome, and he acquired that facility for which he was peculiarly distinguished, and which rendered the delivery of lec-

tures a source of real pleasure to him. We may here mention, that on returning home after his introductory lecture, accompanied by a young friend, Mr. Hunter, who had received about seventy guineas from his pupils, and had got the money in a bag under his cloak, observed, that it was a larger sum than he had ever been master of before: an anecdote which, as Dr. Simmons remarks, deserves to be recorded as an encouragement to young men, who with great merit possess but little advantages of fortune. Considerable as the emoluments of his two first courses were, by contributing to the wants of different friends, he found himself, at the return of the next season, obliged to defer his lectures for a fortnight, merely because he had not money enough to defray the necessary expence of advertisements. This produced a resolution to be in future as cautious in lending money, as he was averse to borrowing it. His own habits were strictly economical, and laid the foundation of that ample fortune, which he so freely expended upon subjects of public utility.

In the spring of 1748, he set out on a tour through Holland to Paris, with his pupil young Douglas. The only circumstance recorded of this journey, is his introduction to the celebrated Albinus at Leyden; whose admirable injections inspired him with a strong emulation to excel in that curious and important part of anatomy. Although admitted into the corporation of surgeons in the preceding year, he now relinquished that branch of practice, to which he had always a strong aversion, and directed his views to the practice of midwifery, in which his patron Dr. Douglas had acquired considerable reputation. His advancement in this department was accelerated by his being elected surgeon-acoucheur first to the Middlesex, and soon afterwards to the British Lying-in-hospital, as well as by the delicacy of his person and manners, which gave a great advantage over his countryman, Dr. Smellie. He was likewise recommended by several of the most eminent surgeons of that time, from a respect for his anatomical talents; and the death of sir Richard Manningham, and the retirement of Dr. Sandys, (who then had the most lucrative practice in that branch,) concurred to assist Mr. Hunter's progress. In 1750, he obtained the degree of M. D. from Glasgow; and as his reputation increased, he was much consulted as a physician, both in cases connected with his particular branch of practice, and in those which required peculiar anatomical skill in their investigation. About this time he quitted the family of Mrs. Douglas, and took a house in Jermyn-street.

In 1751, Dr. Hunter revisited his native country; but with the exception of this journey, to which he devoted only a few weeks, he was never absent from London but under professional engagements. In 1756 he was admitted a licentiate of the College of Physicians, and soon afterwards was elected a member of the Medical Society, recently instituted; the "Medical Observations and Inquiries" of which he enriched by many valuable communications, and of which he was deservedly chosen president on the death of Dr. Fothergill. It will be sufficient here to notice the most important of the contributions to medical science, of which Dr. Hunter was the author, in the excellent volumes published by this society. In his history of an aneurism of the aorta, contained in the first volume, 1757, he was the first to notice a peculiar form of this disease, occasioned by the wounding of an artery through a vein, with which vessel, after healing externally, the artery continues to maintain a communication. Of this disease he afterwards treated more at large (see Med. Obs. and Inquir. vol. ii. and iv.); and it has been since named an *aneurismal varix*, at the suggestion of Dr.

Dr. Cleghorn. (Ibid. vol. iii.) In the second volume, among several other papers, is the description of a case of emphysema, followed by some judicious practical remarks on the cellular membrane and its diseases. He here maintained the opinion that the vesicles, in which the fat is deposited, are different from the cells that contain water in anasarca. In the fourth and fifth volumes he communicated his valuable observations relative to the retroversion of the uterus, which sometimes occurs in pregnancy, and is liable to produce a fatal event, if not remedied in time; a disease not understood till accurately described by Dr. Hunter. All his papers, published in the volumes alluded to, are worthy of attention.

In the year 1762 Dr. Hunter came forward as a controversialist, and with a degree of asperity, which has very commonly attended anatomical controversies, maintained his claims to different anatomical discoveries. In his "Medical Commentaries," to which a "Supplement" was afterwards added, he supported the priority of his discoveries over those of Dr. Monro, jun. professor of anatomy at Edinburgh, in respect to the ducts of the lachrymal glands, injections of the testicle, the origin and use of the lymphatic vessels, and absorption by veins. There is nothing more difficult to ascertain, as Dr. Aikin has justly observed (Gen. Biog.), than the exact share in the improvements of a professional science, due to the individuals who are simultaneously pursuing it, with equal ardour and advantages; nor is the determination of any consequence to the science itself. The great doctrine of the absorbent action of the lymphatic system, which is now fully received, at least by the anatomists of Great Britain, was taught and illustrated at the same time in the schools of London and of Edinburgh, and exercised the ingenuity of Hunter, Monro, Hewson, Cruickshank, and other anatomists. Dr. Simmons has shewn, however, that the principal points of this system had been stated, so long ago as the year 1726, by Mr. Noguez, in the second edition of a work entitled "L'Anatomie du Corps de l'Homme en abrégé," printed at Paris. Who may have first succeeded in a lucky injection seems a matter scarcely worthy of contest; but Dr. Hunter was extremely tenacious of any claims of this kind, and would not suffer the interference even of his own brother. Some papers, in which a claim of Mr. John Hunter, relative to the connection between the placenta and uterus, was disputed by the doctor in 1780, are preserved in the archives of the Royal Society. In the "Commentaries" there are also some observations on the insensibility of the dura mater, periosteum, tendons, and ligaments, as taught with some slight difference by Haller; and likewise "Observations on the State of the Testis in the Fœtus, and on the Hernia Congenita, by Mr. John Hunter."

The professional reputation which Dr. Hunter had already attained was evinced by his being consulted in the pregnancy of the queen, in 1762. Two years afterwards he was appointed physician extraordinary to her majesty; a distinction for which he was indebted solely to his personal merit. In 1767 he was elected a fellow of the Royal Society; and in the following year he communicated to that body some observations on the bones found near the river Ohio, in America, which were commonly supposed to belong to the elephant. But he proved, chiefly from the structure of the teeth, that they belonged to some unknown quadruped, of a different species. (Phil. Trans. vol. 58.) In the 60th and 61st volumes of the same publication, were printed a memoir on some fossil bones, found in the rock of Gibraltar, and an account of the Nyl-ghau, a non-descript Indian animal. In 1768, Dr. Hunter was elected into the Society of Antiquaries, and was appointed by his majesty to the office of professor of anatomy to the Royal Academy of Arts, on its first institu-

tion. This appointment opened a new field for the application of his anatomical knowledge, in relation to external form, as the object of painting and sculpture. He engaged in it, as in every other pursuit of his life, with unremitting zeal, and the novelty and ingenuity of his observations displayed the extent and versatility of his talents. Finally, he received other literary honours from learned societies abroad; being chosen a foreign associate of the Royal Medical Society of Paris in 1780, and of the Royal Academy of Sciences, in the same city, in 1782.

So early as the year 1751, Dr. Hunter had commenced a work, upon which he continued to bestow incessant attention and great expence for several subsequent years; this was his splendid publication, "The Anatomy of the Gravid Uterus," which appeared in 1775, illustrated by 34 large engravings, executed from capital drawings of subjects and preparations, by the first masters. This great work, not less admirable for its accuracy than for its magnificence, exhibited all the principal changes that occur in the nine months of pregnancy, in a degree of perfection which had never before been approached. In this work he first delineated the retroverted uterus, and the membrana decidua reflexa, which he himself discovered. He drew up a detailed anatomical description of the figures, which he did not live to finish, but which was completed and published by his nephew, Dr. Baillie, in 1794, under the title of "Anatomical Description of the Gravid Uterus and its Contents." In 1778 he published his "Reflections on the Section of the Symphysis Pubis," an operation introduced by the French, but which the cooler judgment of English practitioners rejected upon the most solid grounds. Among Dr. Hunter's papers were found "Two Introductory Lectures" to his anatomical course, correctly written out, which were published in 4to. in 1785, and which complete the catalogue of his publications.

Having followed the course of Dr. Hunter's labours as a teacher and writer, we must go back a little in order to trace his progress in the foundation of a museum, which he destined for public use. His first desire, when he commenced the practice of midwifery, was to acquire a sufficient fortune to secure him ease and independence; and in a few years he found himself in possession of this competency. As his wealth continued to accumulate, he formed the laudable design of employing his superfluity in some scheme of public utility; and the foundation of an anatomical school in the metropolis naturally suggested itself. About the year 1765, therefore, he presented a memorial to the minister, Mr. Grenville, requesting a grant of ground in the King's Mews, on which he offered to build a proper edifice at the expence of seven thousand pounds, and to endow a professorship of anatomy in perpetuity. This offer was received coldly; and after some delay Dr. Hunter purchased a spot of ground in Great Windmill street, on which he built a house, together with an anatomical theatre, and a museum, and removed thither from Jermyn street in 1770. The first furniture of the museum consisted of an extensive collection of anatomical preparations, formed with great labour and expence; to which, however, he now added fossils, shells, and other objects of natural history; a great treasure of Greek and Latin books in the rarest editions; and, lastly, a cabinet of ancient coins and medals, which was collected progressively at the expence of upwards of 20,000*l.* A description of part of the coins, in this collection, struck by the free Greek cities, was published by his friend Mr. (now Dr.) Combe, under the title of "Nummorum Veterum Populorum et Urbium, qui in Museo Gulielmi Hunter asservantur; descriptio, figuris illustrata Opera et studio Caroli Combe, S. R. et S. A.

Soc." 4to. 1783. An easy access was always given to persons who wished to view and consult this museum, and its reputation among foreigners reflected honour upon the capital containing it.

Dr. Hunter continued to teach and to practise in his profession, with unabated assiduity, until March 1783, when an attack of a wandering gout, to which he was subject, obliged him to keep to the house for some days. A partial recovery induced him, contrary to the advice of his friends, to deliver a lecture; but the effort so much exhausted him that he fainted away, and a slight paralytic attack followed in the night. His intellects remained clear, however, until death, and he surveyed its approach with so much tranquillity, that in his last moments he said to Mr. Combe, "If I had strength enough to hold a pen; I would write how easy and pleasant a thing it is to die." He expired on the 30th of March 1783.

In person Dr. Hunter was slender, and rather below the middle stature. He was a man of mild and sedate character, easy in conversation, engaging in his address, steady in the pursuit of his objects, simple and regular in his mode of life. As a practitioner he was cautious, perhaps to the verge of timidity; but singularly qualified to inspire confidence in his patients. As a lecturer he peculiarly excelled in the clearness of his demonstrations. No man has so much contributed to the propagation of anatomical knowledge in this kingdom, and to the reputation of London as a school for that science. By his will he bequeathed to his nephew, Matthew Baillie, M. D. (his successor as a teacher of anatomy, and now the most eminent physician in the metropolis, 1810,) his museum, for a term of 30 years, with a sum for its augmentation, and annuities to three trustees for the care of it, while in London. At the end of that period it was to go to Glasgow: but Dr. Baillie has already had it removed to that university some years before the completion of that term. See an Account of the life, &c. of Wm. Hunter, M. D. by Dr. S. F. Simmons; 1783. Gen. Biog.

HUNTER, JOHN, a very eminent surgeon, brother of the preceding, and youngest of the family, was born in July 1728. Being his mother's favourite, and his father, through age and indisposition, being unable to pay much attention to him, he was brought up in a course of indulgence, which proved injurious both to his temper and his progress in learning. It was late and with great difficulty that he was taught to read; and after his father's death, he was left, at the age of 10, an ill-governed boy, neglecting his education, and spending his time in idleness and country amusements. Yet he exhibited marks of an acute understanding and of a bold disposition. As he appeared to have a mechanical turn, and some manual dexterity, he was sent to Mr. Buchanan, a brother-in-law, lately settled in Glasgow, as a carpenter and cabinet-maker; but the want of success in this person's business left young Hunter again unemployed. Having heard of the reputation which his brother William was now acquiring in London, he wrote to request permission to visit him, and to try to make himself useful as an anatomical assistant, or, if that should be refused, to enter the army. The offer was readily embraced by William, and John arrived in London in September 1748, just before the commencement of the winter course of lectures. His first essays in dissection satisfied his brother of the certainty of his ultimate proficiency in anatomy, which he cultivated with such success, as to be capable of undertaking the demonstrations to the pupils in the dissecting room in the following winter. In the summer months he attended the practice of surgery at the Chelsea hospital, under Mr. Cheselden, and afterwards at St. Bartholomew's and St. George's hospitals, of which

last he was appointed house-surgeon in 1756. It does not appear with what intention he was entered as a gentleman-commoner at St. Mary's hall, Oxford, in 1753. Literary distinction seems never to have been his ambition, nor indeed within his reach. This probably he soon discovered; for we find no intermission of his professional pursuits in London. In the winter of 1755, Dr. Hunter admitted him to a partnership in his lectures. He applied himself to dissection, and to making anatomical preparations, with unexampled ardour and perseverance, in which he was highly useful to his brother's collection. Having thus laboured for ten years in the investigation of human anatomy, he turned his inquiries to the anatomy of other animals, with a view to elucidate the use of the different organs, by a comparative view of their structure, and thus to acquire a more certain knowledge of the general principles of the animal economy. He prosecuted these researches with the ardour of an enthusiast, and suffered no opportunity of examining animals of every description to escape him. His health was so much impaired, however, by this excessive application, that in the year 1760 he went abroad as surgeon on the staff, and served during the war in Belle-Isle and in Portugal, where he acquired his knowledge of gunshot wounds. On his return in 1763, he settled as a surgeon in London, and added to the scanty income derived from his practice, by teaching practical anatomy and operative surgery for several winters. His ardour for comparative anatomy continued unabated; and for the greater facility of carrying on his experiments, he purchased a piece of ground at Earl's Court, Brompton, where he built a house. Here he kept several foreign animals, of whose manners and habits he was a sedulous observer, and subsequently made his observations and experiments relative to the economy of the bee, the silkworm, and other insects; to the progress of incubation in the egg; to the growth of vegetables; to the transplanting of teeth into the combs of cocks, &c. &c. with the description of which he enriched the volumes of the Philosophical Transactions, and with his preparations formed that unrivalled museum, of which we shall presently speak. He was elected a member of the Royal Society in 1767; and, in order to promote scientific improvement more effectually than could be done by formal meetings, he was the means of associating some of the most active members in a conversation party at a coffee-house, after the public business of the society was ended. This at first consisted only of Dr. G. Fordyce, Mr. Cuming, and himself; but they were soon joined by sir Joseph Banks, Dr. Solander, Dr. Maskelyne, &c.

When Dr. Hunter removed to his new establishment in Windmill-street, he assigned the lease of his house in Jermyn-street to Mr. Hunter. About the same time Mr. Hunter became a member of the corporation of surgeons, and, through his brother's interest, was elected one of the surgeons to St. George's hospital. In 1771, finding his business increasing with his reputation, he married a lady to whom he had been long engaged, the eldest daughter of Mr. Home, a military surgeon, and sister to the present Mr. Everard Home. She was a person of elegant accomplishments; and has lately obliged the public with a volume of poems. His house was now frequented by medical students, who came to finish their education in London, and who were desirous of a residence in a situation so favourable to their improvement. Among others of his pupils, who have since attained to professional eminence, we may mention the name of Jenner, immortalized by the discovery of the preventive powers of the cow-pox. In 1771 he published his first work, "On the Natural History of the Teeth," in 4to. It displayed great accuracy of research, and was illustrated with excellent plates. In 1773 he commenced a course of lectures on the theory and

principles of surgery, in which he brought forward many peculiar opinions, expressed in a peculiar language, which he introduced into physiological and pathological science. Part of the peculiarity of his language, however, must be attributed to his want of a regular literary education, and arose from his misconception of its proper use; and to the same defect must be ascribed his failure to acquire that methodical arrangement of his ideas, and clearness and facility in expressing them, for which his brother was so much distinguished. However, he was a real improver of his profession, both in a theoretical and practical view. He suggested new methods of treatment in ruptures of the tendo Achillis, in the operation for hydrocele, and for fistula lachrymalis, &c.; but the most important of his surgical improvements was the method of operating for the popliteal aneurism, by taking up the femoral artery on the anterior part of the thigh.

In the year 1776, Mr. Hunter was appointed surgeon-extraordinary to his majesty. In 1778 he published the second, or practical part, of his "Treatise on the Teeth," in which their diseases were considered. Soon afterwards, he was elected a member of the Royal Society of Gottenburgh, and of the Royal Medical Society, and Royal Academy of Surgery, at Paris. In the year 1783, the term of his lease in Jermyn-street expiring, and his collection being now too large to be contained in his dwelling-house, he purchased the lease of a large house on the east side of Leicester-square, with premises extending to Castle-street, on which he erected a spacious building for his museum, at a cost much beyond the dictates of prudence. Had his age and state of health, indeed, justified the expectation of a long continuance of the emoluments which were beginning to flow in upon him, no expenditure connected with his fame could have been thought censurable. At this period his faculties of body and mind seem to have been exerted to the utmost, and every moment had its full employ. He was now engaged in a very extensive private practice; he was surgeon to St. George's hospital; he was giving a long course of lectures in the winter; he was carrying on his inquiries in comparative anatomy, and adding to his museum; he had a school of practical anatomy in his own house, and was constantly employed in some experiments respecting the animal economy. The post of deputy surgeon-general to the army was conferred upon him in 1786; and in the same year his great and long-expected work "On the Venereal Disease" made its appearance. Few medical performances have been more read; but it underwent some severe criticisms, both theoretical and practical: nevertheless it will ever remain a monument to his extraordinary sagacity and talent of observation. He also published in this year, "Observations on various Parts of the animal Economy," chiefly composed of papers already printed in the Philosophical Transactions. In the spring of this year Mr. Hunter was seized with a severe illness, from which he recovered slowly, and which left his constitution impaired; he became subject especially to an affection of the heart, which came on upon every violent agitation of the mind, or sudden exertion of the body. In 1790 he was appointed inspector-general of hospitals, and surgeon-general to the army, which gave him much additional occupation; and he then resigned his course of lectures to his brother-in-law, Mr. Home, still employing all his little leisure in scientific pursuits. From the autumn of this year, however, the series of spasmodic and other uneasy symptoms, connected with the affection of the heart, and constituting what is named angina pectoris, which had for some time harassed him, increased considerably in violence, and to himself and others portended a suddenly fatal termination.

During the years 1791 and 1792, he had many severe attacks, but of not more than a few hours duration. On the 16th of October 1793, when in his usual state of health, he went to St. George's hospital, where something occurred which irritated him; but of the circumstances of which he was not perfectly master. He therefore withheld his sentiments, and withdrew into the next room, where, in the act of turning round to one of the physicians, he gave a deep groan, and dropped down dead.

On dissection, the heart was found to be the principal seat of disease. That organ appeared as if shrunk in its size; the coronary arteries, which ramify in its substance, were completely ossified, or in the state of bony tubes; and the valves were in a state of incipient ossification.

Mr. Hunter was a man of a warm and impatient temper, but open and undisguised. He was naturally cheerful and social; and his countenance bore the stamp of frankness and animation; though in his latter years it was deeply impressed with thoughtfulness. The admirable print of him, from a portrait by sir Joshua Reynolds, strongly confirms the judgment made of it by Lavater: "This man thinks for himself." In originality of genius and powers of investigation, he appears to have surpassed his brother; industry and perseverance equally belonged to both.

In order to avoid interruption to the biographical narrative, we have omitted to notice the very numerous and important papers which Mr. Hunter presented to the Royal Society, in rapid succession, especially between the years 1773 and 1783, chiefly relating to comparative anatomy and physiology; nor have we room at present to enumerate their titles. His fame, however, will principally rest upon his various discoveries in this branch of science; and it would be injustice to his character not to describe, as amply as our limits will admit, the anatomical museum, the formation of which may be regarded as having been the main object of his life. In its plan it was absolutely unique, and the perfection to which he brought it rendered it the admiration of all who were capable of judging of its value. It embraced the grand design of exposing to view the gradations of nature, from the most simple state in which life is found to exist, to the most perfect and complete piece of animal mechanism, that of man. This collection of anatomical facts is arranged according to the functions they are intended to illustrate, the different parts of animal bodies intended for similar uses being brought together in series, so that the various links in the chain of perfection are readily followed, and clearly understood. This arrangement comprehends four great orders: the *first*, parts constructed for motion; *second*, parts essential to animals respecting their own internal economy and preservation; *third*, parts superadded for purposes connected with external objects; and, *fourth*, parts for the propagation of the species, and the maintenance of the young. The *first order* exhibits the fluids of living bodies in a series, from the simple colourless sap of some vegetables to the coloured and coagulating blood;—the muscles, from the straight simple muscle to the most complicated structure with elastic ligaments;—the growth of bone, horn, shell, &c.;—and the varieties of joints. The *second order* comprehends the organs of digestion, beginning with the hydatid, which is itself a simple pouch, and passing to the polypus, the leech, and more complicated animals, including a series of stomachs, of intestinal canals, and of the glands connected with them, as livers, spleens, &c. After the organs of digestion follows the system of absorbing vessels, from the roots of plants up to the lacteals and lymphatics of different animals. The next step is to the heart, which, in the caterpillar is a simple canal, and receives various additions as we

ascend in the scale, until we find it a double heart in man and quadrupeds: this leads to the structure of arteries and veins. Then the lungs are shewn in all their gradations, from the simple vascular lining of the egg-shell, which serves as lungs for the chicken, to those of the more perfect animals, including gills, &c. The windpipe and organs of voice are shewn under their different forms. And, lastly, the kidneys are exhibited, which separate the superfluous fluids from the circulation. The *third order* takes up the brain from its simplest state in the leech, to the snail, insects, fish, &c. upwards;—the varieties of all the organs of sense in the different tribes of living things; and, lastly, the external coverings of hair, feathers, scales, &c.; the weapons of offence and defence, as spurs, hoofs, horns, stings, and electric organs. As an appendix to this order, some peculiar structures are added, such as the air-bladder in fish, &c. The *fourth order* includes all the variety of parts connected with the process of generation in plants and animals, from the polypus and coral, to the perfect animals;—those of females in the maiden and impregnated state, including the products of seeds, spawn, eggs, &c.; the progress of incubation; the peculiarities of the fetus; and the various organs for the nourishment of the young. This sketch gives a very inadequate idea of the amazing number of objects, from every department of nature, which the collection comprised; but it contains, besides, a large series of whole animals, arranged according to their internal structure, many of them the rarest ever brought into this country; such as the camelopard, hippopotamus, &c. It comprehends, moreover, a series of skulls of different animals, and skeletons of almost every known genus;—an immense number of calculi, urinary, biliary, and intestinal;—a large collection of shells and insects;—and a most complete assortment of extraneous fossils. By his will, Mr. Hunter directed that this museum should be offered to the purchase of government; and, after some negotiation, it was bought for the public use for the sum of 15,000*l.* and given to the college of surgeons, on condition of exposing it to public view on certain days in the week, and giving a set of annual lectures explanatory of its contents. A large building for its reception has been completed in Portugal-street, connected with the college of surgeons, in Lincoln's-Inn-Fields; and in the spring of the present year (1810) the first course of lectures was delivered by Mr. Home and sir William Blizard.

At the time of his death, Mr. Hunter had made considerable progress in the printing of "A Treatise on the Blood, Inflammation, and Gun-shot Wounds," which was published in 1794, under the inspection of Mr. Home, who prefixed a biographical account of the author. See this Account; also Gen. Biog.

HUNTER, HENRY, a popular preacher and writer, was born at Culrofs, in Perthshire, in the year 1741. He had the best education that the circumstances of his parents would permit, and at the age of thirteen was sent to the university of Edinburgh, where, by his talents and proficiency, he attracted the notice of the professors, and at the age of seventeen he was appointed tutor to Mr. Boswell, afterwards one of the lords of session. When he left Edinburgh he accepted the office of tutor to lord Dundonald's sons at Culrofs abbey. In 1764 he was licensed to preach, having passed the several trials with great applause: and very quickly became much followed on account of his popular pulpit talents. He was ordained in 1766, and was appointed minister of South Leith. On a visit to London in 1769, he preached in most of the Scotch meeting-houses with great acceptance, and soon after his return he received an invitation to become pastor of the

Scotch church in Swallow-street, which he declined; but in 1771 he removed to London, and undertook the pastoral office in the Scotch church at London Wall. He appeared first as an author in 1783, by the commencement of his "Sacred Biography," which was at length extended to seven volumes octavo. While this work was in the course of publication, he engaged in the translation of Lavater's "Essays on Physiognomy," and in order to render his work as complete as possible, he took a journey into Swisserland, for the purpose of procuring information from Lavater himself. He attained, in some measure, his object, though the author did not receive him with the cordiality which he expected, suspecting that the English version might injure the sale of the French translation. The first number of this work was published in the year 1789, and it was finished in a style of respectability worthy the improved state of the arts. From this period Dr. Hunter spent much of his time in translating different works from the French language. In the year 1790 he was elected secretary to the corresponding board of the "Society for propagating Christian Knowledge in the Highlands and Islands of Scotland." He was likewise chaplain to the "Scotch Corporation," and both these institutions were much benefited by his zealous exertions in their behalf. In the year 1795, he published two volumes of sermons, and in 1798 he gave the world eight "Lectures on the Evidences of Christianity," being the completion of a plan begun by Mr. Fell. The whole contains a popular and useful elucidation of the proofs in favour of the Christian religion, arising from its internal evidence, its beneficial influence, and the superior value of the information which it conveys with respect to futurity. During the latter years of his life, Dr. Hunter's constitution suffered the severest shocks from the loss of three children, which, with other causes, contributed to render him unable to withstand the attacks of disease. He died at the Hot-Wells, Bristol, on the 27th of October 1802, in the 62d year of his age. Dr. Hunter was a man of learning: his writings are eloquent, and shew how well he had studied human nature. In the pulpit his manner was unaffected, solemn and impressive. He indulged his liberal and friendly heart in the exercise of hospitality, charity, and the pleasures of social intercourse, frequently beyond the limits which a regard to prudence and economy should have prescribed. He was the translator of "Letters of Euler to a German Princess, on different Subjects in Physics and Philosophy;" "The Studies of Nature by St. Pierre;" "Saurin's Sermons;" "Sonnini's Travels." Miscellaneous pieces and sermons of his own have been published since his death, to which are prefixed Memoirs: from these the foregoing particulars have been taken. Dr. Hunter, about the year 1796 or 7, began "A History of London and its Environs," which came out in parts, and which has lately been finished by other editors. It makes two large quarto volumes.

HUNTER, a name given to a horse qualified to carry a person in the chaise. The shape of the horse designed for this service, should be strong and well knit together, as the jockies express it. Irregular or unequal shapes in these creatures are always a token of weakness. The inequalities in shape which shew a horse improper for the chaise, are the having a large head and a small neck, a large leg and a small foot, and the like. The head of the hunter should, indeed, always be large, but the neck should also be thick and strong to support it. The head should be lean, the nostrils wide, and the wind-pipe straight.

The whole shape of a horse intended for a hunter should be this: the ears should be small, open, and pricked; or though they be somewhat long, yet if they stand up erect,

HUNTER.

and bold, like those of a fox, it is a sign of toughness or hardness. The forehead should be long and broad, not flat; or, as it is usually termed, mare-faced, but rising in the middle like that of a hare; the feather should be placed above the eye, the contrary being thought by some to threaten blindness. The eyes should be full, large and bright; the nostrils not only large, but looking red and fresh within; for an open and fresh nostril is always esteemed a sign of a good wind. The mouth should be large, deep in the wicks, and hairy. The wind-pipe should be large, and appear straight when he bridles his head; for if, on the contrary, it bends like a bow on his bridling, it is not formed for a free passage of the breath. This defect in a horse is expressed among the dealers by the phrase cock-throated. The head should be so set on to the neck, that a space may be felt between the neck and the chine; when there is no such space, the horse is said to be bull-necked, and this is not only a blemish in the beauty of the horse, but it also occasions his wind not to be so good. The crest should be strong, firm, and well risen; the neck should be straight and firm, not loose and pliant; the breast should be strong and broad; the ribs round like a barrel, the fillets large; the buttocks rather oval than broad; the legs clean, flat, and straight; and, finally, the mane and tail ought to be long and thin, not short and bushy, the last being counted a mark of dulness. When a hunter is thus chosen, and has been taught such obedience, that he will readily answer to the rider's signals, both of the bridle and hand, the voice, the calf of the leg, and the spurs; that he knows how to make his way forward, and has gained a true temper of mouth, and a right placing of his head, and has learned to stop and to turn readily, if his age be sufficiently advanced, he is ready for the field. It is a rule with all staunch sportsmen, that no horse should be used in hunting till he is full five years old; some will hunt them at four, but the horse at this time is not come up to his true strength and courage, and will not only fail at every tough trial, but will be subject to strains and accidents of that kind, much more than if he were to be kept another year first, when his strength would be more confirmed.

When the hunter is five years old, he may be put to graze from the middle of May till Bartholomew-tide; for the weather between these is so hot, that it will be very proper to spare him from work. At Bartholomew-tide the strength of the grazes beginning to be nipped by frosts and cold dews, so that it is apt to engender crudities in the horse, he should be taken up while his coat is yet smooth and sleek, and put into the stable. When he is first brought home, he should be put in some secure and spacious place, where he may evacuate his body by degrees, and be brought, not all at once, to warm keeping; the next night he may be stabled up. It is a general rule with many not to clothe and stable up their horses till two or three days after they are taken from grazes, and others who put them in the stable after the first night, yet will not dress and clothe them till three or four days afterward; but all this, except the keeping the horse one day in a large and cool place, is needless caution.

There is a general practice among the grooms, in many places, of giving their hunters wheat-straw as soon as they take them up from grazes. They say they do this to take up their bellies; but there seems much reason to disapprove of this. The change is very violent, and the nature of the straw so heating and drying, that there seems great reason to fear that the astringent nature of it would be prejudicial, more than is at first perceived. It is always found that the dung is hard after this food, and is voided with pain and difficulty, which is in general very wrong for this sort of

horse. It is better, therefore, to avoid this straw-feeding, and to depend upon moderate airing, warm cloathing, and good old hay, and old corn, than to have recourse to any thing of this kind.

When the horse has evacuated all his grazes, and has been properly shod, and the shoes have had time to settle to his feet, he may be ridden abroad, and treated in this manner: the groom ought to visit him early in the morning, at five o'clock in the long days, and at six in the short ones; he must then clean out the stable, and feel the horse's neck, flank, and belly, to find the state of his health, if the flank feels soft and flabby, there is a necessity of good diet to harden it, otherwise any great exercise will occasion swellings and goutiness in the heels. After this examination, a handful or two of good old oats, well sifted, should be given him: this will make him have more inclination to water, and will also make the water sit better on his stomach than if he drank fasting. After this he is to be tied up and dressed. If in the doing of this he opens his mouth, as if he would bite, or attempts to kick at the person, it is a proof that the teeth of the curry-comb are too sharp, and must be filed blunter. If after this he continues the same tricks, it is through wantonness, and he should be corrected for it with the whip. The intent of currying being only to raise the dust, this is to be brushed off afterwards with a horse-tail nailed to a handle, or any other light brush. Then he is to be rubbed down with the brush, and dusted a second time; he should then be rubbed over with a wet band, and all the loose hairs, and whatever foulness there is, should be picked off. When this is done, and he is wiped dry as at first, a large saddle-cloth is to be put on, reaching down to the spurring-place; then the saddle is to be put on, and a cloth thrown over it, that he may not take cold; then rub down his legs, and pick his feet with an iron picker, and let the mane and tail be combed with a wet mane-comb. Lastly, it is a custom to spurt some beer into his mouth just before the leading him out of the stable. He should then be mounted, and walked a mile at least to some running water, and there watered; but he must only be suffered to take about half his water at one drinking.

It is the custom of many to gallop the horse at a violent rate as soon as he comes out of the water, but this is extremely wrong for many reasons. It endangers the breaking a horse's wind more than any other practice, and often has been the occasion of bursting very good horses. It uses them also to the disagreeable trick we find in many horses, of running away as soon as ever they come out of the water; and with some it makes them averse to drinking, so that they will rather endure thirst, and hurt themselves greatly by it, than bring on the violent exercise which they remember always follows it. The better way is to walk him a little after he is out of the water, then put him to a gentle gallop for a little while, and after this to bring him to the water again. This should be done three or four times, till he will not drink any more. If there is a hilly place near the watering-place, it is always well to ride up to it; if otherwise, any place is to be chosen where there is free air and sun. That the creature may enjoy the benefit of this, he is not to be galloped, but walked about in this place an hour, and then taken home to the stable. The pleasure the horse himself takes in these airings, when well managed, is very evident, for he will gape, yawn, and shrug up his body; and in these, whenever he would stand still to stale, dung, or listen to any noise, he is not to be hindered from it, but encouraged in every thing of this kind.

The advantages of these airings are very evident; they purify

purify the blood, teach the creature how to make his breathing agree with the rest of the motions of his body, and give him an appetite to his food, which hunters and racers, that are kept stalled up, are otherwise very apt to lose. On returning from airing, the litter of the stable should be fresh, and by stirring this, and whistling, he will be brought to stale. Then he is to be led to his stall, and tied up, and again carefully rubbed down; then he should be covered with a linen cloth next his body, and a canvas one over that, made to fit him, and reaching down to his legs. This, as the duke of Newcastle observes, is a custom which we learnt of the Turks, who are, of all people, the most nice and careful of their horses. Over this covering there should be put a body-cloth of six or eight straps; this keeps his belly in shape, and does not hurt him. This cloathing will be sufficient while the weather is not very sharp, but in severe seasons, when the hair begins to rise and start in the uncovered parts, a woollen cloth is to be added, and this will always prove fully sufficient.

Different horses and different seasons make a variety of the degree of cloathing necessary; but there always is an obvious rule to point out the necessary changes, the roughness of the coat being a mark of the want of cloathing, and the smoothness of it a proof that the cloathing is sufficient. Therefore, if at any time the hair is found to start, it is a notice that some farther cloathing is to be added.

If the horse sweat much in the night, it is a sign that he is over-fed, and wants exercise; this, therefore, is easily remedied. An hour or more after the horse is come in from his airing, the groom should give him a whisp of clean hay, making him eat it out of his hand: after this let the manger be well cleaned out, and a quartern of oats clean sifted be given him. If he eats up this with an appetite, he should have more given him; but if he is slow and indifferent about it, he must have no more. The business is to give him enough, but not to cloy him with food.

If the horse gets flesh too fast on this home feeding, he is not to be stinted to prevent it, but only his exercise increased; this will take down his flesh, and at the same time give him strength and wind. After the feeding in the morning is over, the stable is to be shut up, only leaving him a little hay on his litter. He need be no more looked at till one o'clock, and then only rubbed down, and left again till the time of his evening watering, which is four o'clock in the summer, and three in the winter. When he has been watered, he must be kept out an hour or two, or more, if necessary, and then taken home and rubbed as after the morning watering. Then he is to have a feed of corn at six o'clock, and another at nine at night; and being then cleaned, and his litter put in order, and hay enough left for the night, he is to be left till morning. This is the direction for one day, and in this manner he is to be treated every day for a fortnight, at the end of which time his flesh will be so hardened, his wind so improved, and his mouth so quickened, and his gallop brought to so good a stroke, that he will be fit to be put to moderate hunting. During the time that he is used to hunting, he must be ordered on his days of rest exactly as he is directed for the fortnight when he is in preparation; but as his exercise is now greatly increased, he must be allowed a more strengthening food, mixing some old split beans at every feeding with his oats.

And if this is not found to be sufficient, the following bread must be given: let two pecks of old beans, and one peck of wheat be ground together, and made into an indifferently fine meal; then knead it into dough, with some

warm water, and a good quantity of yeast: let it lie a time that it may rise and swell, which will make the bread the lighter; then make it into loaves of a peck each, and let it be baked in a slow oven, that it may be thoroughly done, without being burnt; when it is taken out of the oven, it must be set, bottom upwards, to cool; when it is one day old, the crust is to be chipped off, and the crumb given him for food. When this is ready, he should have some of it at least once in the day; but it is not to be made the only food, but some feeds are to be of oats alone; some of oats and this bread, and some of oats and beans mixed together. The making a variety in this manner, being the best of all methods of keeping up the appetite, which is often apt to fail.

The day before the horse is to hunt, he must have no beans, because they are hard of digestion, but only some oats with this bread; or if he will be brought to eat the bread alone, that will be best of all. His evening feed should, on this day, be somewhat earlier than usual; and after this, he is only to have a whisp of hay out of the groom's hand till he return from hunting.

The hunter, in order to his behaving well in the field, ought to have great care and indulgence in the stable: he ought to have as much rest and quiet as may be, to be kept well supplied with good meat, clean litter, and fresh water by him; he should be often dressed, and suffered to sleep as much as he pleases. He should be so fed that his dung may be rather soft than hard, and it must be of a bright and clean colour. All this may be easily managed by the continual observance and change of his food, as occasion requires. After his usual scourings he should have exercises and mashes of sweet malt, or bread and beans; or wheat and beans mixed together, are to be his best food, and beans and oats his worst.

Some very great sportsmen are for keeping their horses out at grafs all the buck-hunting season, never taking them up into the stable at all, but allowing them in the field as much oats with their grafs as they will eat. The horse may be thus rid three days in the week for the whole season, and never damaged by it, nor ever shewing any marks of harm afterwards.

HUNTER'S Bay, or Rigg bay, in Geography, a bay of Scotland, on the E. coast of the county of Wigton.

HUNTER'S Town, a town, or village, of Pennsylvania, situated in York county; 25 miles W. by S. of York town.

HUNTERDON, a county of New Jersey, in America, bounded N. by that of Morris, E. by Somerset, S.E. by Burlington, S.W. and W. by Delaware river, which separates it from the state of Pennsylvania, and N.W. by Suffex county; about 40 miles long and 32 broad, divided into 10 townships, containing 21,261 inhabitants, including 1220 slaves. On Muskonetcong mountain in this county, is a strong chalybeate spring, to which many persons resort; it issues from the side of an eminence into an artificial reservoir, for the accommodation of those who wish to bathe in, as well as to drink, the waters. The chief town of the county is Trenton.

HUNTING, the art, or act, of pursuing and chasing beats of game. See GAME.

In its general sense, hunting includes the pursuit both of hairy and feathered game; but in its more proper and restrained signification, it is only applicable to beats of venery and chase.

F. De Launay, formerly professor of the French laws, has an express treatise of hunting.

The antiquity of hunting may be traced back upwards of

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2600 years before the Christian era. The sacred history describes the first warriors under the name of hunters. Thus Nimrod is represented as "a mighty hunter before the Lord." (Gen. x. 9.) In the sequel, he made soldiers of his companions, who had assisted him in hunting and destroying the savage beasts that laid waste the country about Babylon, and employed them in extending and establishing his conquests.

" Bold Nimrod first the lion's trophies wore,
The panther bound, and lanc'd the bristling boar:
He taught to turn the hare, to bay the deer,
And wheel the courser in his mid career." Tickell.

We find, that among the more civilized nations, as the Persians, Greeks, and Romans, it always made one of their genteeler diversions; and as to the wilder and more barbarous, it served them with food and necessaries. The Roman jurisprudence, which was formed on the manners of the first ages, made a law of it, and established it as a maxim, that as the natural right of things which have no master belongs to the first possessor; wild beasts, birds, and fishes, are the property of him, whoever he be, that can first take them.

But the northern nations of barbarians, who over-ran the Roman empire, bringing with them a stronger taste for the diversion, and the people being now possessed of other, and more easy means of subsistence from the lands and possessions of those they had vanquished; their chiefs and leaders began to appropriate the right of hunting, and, instead of a natural right, to make it a royal one. Thus it continues to this day, the right of hunting, among us, belonging only to the king, and those who derive it from him.

And hence have arisen all our laws and charters of the forest, laws and regulations for preservation of the game, &c. See FOREST, GAME, and TRESPASS.

The hunting used by the ancients was much like that now practised for the rein deer; which is seldom hunted at force, or with hounds; but only drawn with a blood-hound, and forestalled with nets and engines. Thus did they with all beasts; whence a dog is never commended by them for opening, before he has discovered where the beast lies: hence they were not in any manner curious as to the music of their hounds, or the composition of their kennel or pack, either for deepness, loudness, or sweetness of cry, which is become a principal point in the hunting of our days.

Their huntsmen, indeed, were accustomed to shout and make a great noise, as Virgil observes in the third of his Georgics: "ingentem clamore preme ad retia cervum." But that clamour was only to bring the deer to the nets laid for him.

The Sicilian way of hunting had something in it very extraordinary. The nobles or gentry being informed which way a herd of deer passed, gave notice to one another, and appointed a meeting; every one bringing with him a cross-bow or long-bow, and a bundle of staves, shod with iron, the heads bored, with a cord passing through them all: thus provided they came to the herd, and casting themselves about in a large ring, surrounded the deer. Then, each taking his stand, unbound his faggot, set up his stake, and tied the end of his cord to that of his next neighbour, at the distance of ten feet from one another. Then taking feathers dyed in crimson, and fastened on a thread, they tied them to the cord; so that with the least breath of wind they would whirl round. Which done, the persons who kept the stands withdrew, and hid themselves in the next covert. Then the chief ranger entering within the line with hounds to draw after the herd, roused the game with their cry; which flying towards the line, were turned off, and

still gazing on the shaking and shining feathers, wandered about as if kept in with a real wall or pale. The ranger still pursued, and calling every person by name, as he passed by their stand, commanded him to shoot the first, third, or sixth, as he pleased; and if any of them missed, or singled out another than that assigned him; it was counted a grievous disgrace. By such means, as they passed by their several stations, the whole herd was killed by the several bands.

Hunting constituted a great part of the employment of the ancient Germans and also of the Britons, when the more furious occupations of war did not engage their attention. This was not merely an amusement to which, in many cases, the ferocity of their temper actually inclined them, but it was the principal means by which, in the uncultivated state of the countries which they inhabited, they procured their subsistence. Such was the case so late as the third century with those unconquered Britons who lived beyond Adrian's wall. With the Celtic nations hunting, to which they were inordinately attached, served as a preparatory discipline for war; and it has answered the same purpose in many other nations, which we have been accustomed to denominate barbarous. So general and so ardent was the attachment to hunting among the ancient Britons, that, whilst the chieftains practised it in order to prepossess their mistresses with a favourable opinion of their valour and agility, young ladies of distinguished rank and beauty devoted much of their time to the chase. On account of the general prevalence of this pastime, and its apprehended injury to the general interests of society, the liberty of the chase has been more or less restrained from early ages, and kings and princes have successively augmented their assumed rights in hunting; claiming to themselves the primitive and sole title to hunt; and controlling their nobles, and all persons of inferior rank, from enjoying this amusement, unless, as we have before observed, the privilege was granted by them, and liable to be revoked at their will. Hence arose the numerous and severe restraints and penalties of the game laws. See GAME.

Among the Mexicans hunting was a favourite exercise; and in pursuing it they used, with singular dexterity, bows and arrows, darts, nets, snares, and a kind of tubes, through which they shot out, by blowing, little balls at birds. Those instruments, of this kind, that were used by their kings and great men, were curiously carved and painted, and adorned with silver and gold. Besides their private hunting exercises, in which they engaged for amusement or subsistence, they had also hunting matches, either appointed by the king, or undertaken with a view of providing victims for their sacrifices. A wood, not far from the capital, was selected for this purpose; and it was enclosed by some thousands of hunters, who formed a circle of six, seven, or eight miles, according to the number of animals which they proposed to take. Fire was then set to the grass in a number of places, and a terrible noise was made with drums, horns, shouting and whistling. The hunters at the same time gradually contracted their circle, and thus enclosed the game in a very small space, and it was taken in the snares that had been previously set, or killed by the hunters. The number of animals, comprehending deer, wild goats, hares, rabbits, &c. collected and destroyed on these occasions, is almost incredible.

Hunting was also much practised by the savage and bloody conqueror Genghiz-Khan; and his method of employing his soldiers in a kind of warfare with the beasts, when they had no human enemies with whom to contend, was similar to that of the Mexicans. The chase is still an object to which the East Indian princes are much inclined.

Mr.

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Mr. Blanc, who attended the hunting excursions of Afoph ul Dowlah, visir of the Mogul empire, and nabob of Oude in 1785 and 1786, gives the following account of them.

The time chosen for the hunting party is about the beginning of December; and the diversion is continued till the heats, which commence about the beginning of March, oblige them to stop. During this time a circuit of between 400 and 600 miles is generally made; the hunters bending their course towards the skirts of the northern mountains, where the country is wild and uncultivated. The visir takes along with him not only his court and seraglio, but a great part of the inhabitants of his capital. His immediate attendants may amount to about 2000; but besides these he is also followed by 500 or 600 horse, and several battalions of regular sepoy with their field-pieces. Four or five hundred elephants are also taken along with him; of which some are used for riding; others for fighting, and some for clearing the jungles and forests of the game. About as many sumpter horses of the beautiful Persian and Arabian breeds also accompany him. A great many wheel carriages drawn by bullocks likewise attend, which are used chiefly for the convenience of the women; sometimes also he has an English chaise or two, and sometimes a chariot; but all these, as well as the horses, are merely for show, the visir himself never using any other conveyance than an elephant, or sometimes, when fatigued or indisposed, a palanquin. The animals used in the sport are principally grey-hounds, of which there may be about 300; he has also about 200 hawks, and a few trained leopards for hunting deer. There are a great number of marksmen, whose profession it is to shoot deer; with many fowlers, who provide game: as none of the natives of India know how to shoot game with small shot, or to hunt with slow hounds. A vast number of matchlocks are carried along with the company with many English pieces of various kinds, 40 or 50 pairs of pistols, bows and arrows, besides swords, daggers, and sabres without number. There are also nets of various kinds, some for quail, and others very large, for fishing, which are carried along with him upon elephants, attended by fishermen, so as always to be ready for throwing into any river or lake that may be met with. Every article that can contribute to luxury or pleasure is likewise carried along with the army. A great many carts are loaded with the Ganges water, and even ice is transported for cooling the drink. The fruits of the season and fresh vegetables are daily sent to him from his gardens by bearers stationed at the distance of every ten miles; by which means each article is conveyed day or night at the rate of four miles an hour. Besides the animals already mentioned, there are also fighting antelopes, buffaloes; and rams in great numbers; also several hundred pigeons, some fighting cocks, with a vast variety of parrots, nightingales, &c.

To complete the magnificence or extravagance of this expedition, there is always a large bazar, or moving town, which attends the camp; consisting of shop-keepers and artificers of all kinds, money-changers, dancing-women; so that, on the most moderate calculation, the whole number of people in his camp cannot be computed at fewer than 20,000. The nabob himself, and all the gentlemen of his camp, are provided with double sets of tents and equipage, which are always sent on the day before to the place to which he intends to go; and this is generally eight or ten miles in whatever direction most game is expected; so that by the time he has finished his sport in the morning, he finds his whole camp ready pitched for his reception.

The nabob, with the attending gentlemen, proceed in a regular moving court or durbar, and thus they keep con-

versing-together and looking out for game. A great many foxes, hares, jackals, and sometimes deer, are picked up by the dogs as they pass along: the hawks are carried immediately before the elephants, and let fly at whatever game is sprung for them, which is generally partridges, bustards, quails, and different kinds of herons; these last affording excellent sport with the falcons or sharp-winged hawks. Wild boars are sometimes started, and either shot or run down by the dogs and horsemen. Hunting the tyger, however, is looked upon as the principal diversion, and the discovery of one of these animals is accounted a matter of great joy. The cover in which the tyger is found is commonly long grass, or reeds of such an height as frequently to reach above the elephants; and it is difficult to find him in such a place, as he commonly endeavours either to steal off, or lies so close to the ground that he cannot be roused till the elephants are almost upon him. He then roars and skulks away, but is shot at as soon as he can be seen; it being generally contrived that the nabob shall have the compliment of firing first. If he be not disabled, the tyger continues to skulk along, followed by the line of elephants; the nabob and others shooting at him as often as he can be seen till he falls. The elephants themselves are very much afraid of this terrible animal, and discover their apprehensions by shrieking and roaring as soon as they begin to smell him or hear him growl; generally attempting to turn away from the place where he is. When the tyger can be traced to a particular spot, the elephants are disposed of in a circle round him; in which case he will at last make a desperate attack, springing upon the elephant that is nearest, and attempting to tear him with his teeth or claws. Some, but very few, of the elephants, can be brought to attack the tyger; and this they do by curling up their trunks under their mouths, and then attempting to toss, or otherwise destroy him with their tusks, or to crush him with their feet or knees. It is considered as good sport to kill one tyger in a day; though sometimes, when a female is met with her young ones, two or three will be killed.

The other objects of pursuit in these excursions are wild elephants, buffaloes, and rhinoceroses. Our author was present at the hunting of a wild elephant of vast size and strength. An attempt was first made to take him alive by surrounding him with tame elephants, while he was kept at bay by crackers and other fire-works; but he constantly eluded every effort of this kind. Sometimes the drivers of the tame elephants got so near him, that they threw strong ropes over his head, and endeavoured to detain him by fastening them around trees; but he constantly snapped the ropes like pack-threads, and pursued his way to the forest. Some of the strongest and most furious of the fighting elephants were then brought up to engage him; but he attacked them with such fury that they were all obliged to desist. In his struggle with one of them he broke one of his tusks, and the broken piece, which was upwards of two inches in diameter, of solid ivory, flew up into the air several yards above their heads. Orders were now given to kill him, as it appeared impossible to take him alive; but even this was not accomplished without the greatest difficulty. He twice turned and attacked the party who pursued him; and in one of these attacks struck the elephant obliquely on which the prince rode, threw him upon his side, but then passed on without offering farther injury. At last he fell dead, after having received, as was supposed, upwards of 1000 balls into his body. See ELEPHAS.

Hunting, considered as an exercise, is perhaps the best that can possibly be contrived for strengthening the general habit, and procuring health and vigour. The season of the year, the

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the time of the day defined for this amusement, and the motion necessary on this occasion, are all admirably adapted to the restoration and continuance of health. It is, besides, of no small importance to have the mind recreated at the time the body is exercised; for this admirably affils the due circulation of the fluids through the minute canals defined for their conveyance; and there are few people not utterly abandoned to idleness and debauchery of some kind or other, who do not perceive a spontaneous flow of spirits when they ride at or about the rise of the sun, when they respire the purest air, when variety of perpetually changing scenes present themselves, and when the mind is agreeably agitated concerning the event of the chase.

If we advert to the character of those nations in ancient times, which were most addicted to this exercise, we shall find that they delighted in war, and in oppressing and enslaving their own species. Nimrod, the mighty hunter, was a tyrant. The Lacedæmonians indulged themselves without controul in this exercise, whilst they cruelly oppressed those whom they had in their power. (See *HELOTS*.) The wise legislator Solon restrained the Athenians from gratifying themselves in this way, lest they should be led to neglect the mechanic arts. The Egyptians, Persians, and Scythians, &c. were fond of hunting and of war. As mankind became more civilized, hunting became less prevalent: such was in a degree the case with the Romans, although they continued to a late period to make death and slaughter familiar to the citizens, by the diversions of the amphitheatre and circus, which consisted of exhibitions of wild beasts, and of human gladiators, destroying one another. Those who think the exercise of hunting incompatible with the principles of humanity, allege that it is allowable only when an uncultivated country is over-run with noxious animals, or when it is necessary to kill wild animals for food. For a defence of this diversion, and an attempt to reconcile it with the sentiments and feelings of humanity, see *Manchester Transactions*, vol. i. p. 341, &c.

Hunting is practised in a different manner, and with a different apparatus, according to the nature, genius, and address, of the particular beast which is the object of it. These beasts are, the hart, hare, boar, wolf, buck, doe, fox, marten, and roe; the five first of which are denominated beasts of the forest, or venery, *sylvestres*; and the five latter, beasts of the field, or of chase, *campesires*.

The gentlemen, and masters of the sport, have framed a new set of terms, which may be called the *hunting language*; a concise vocabulary of which we shall here give the reader.

The terms, then, used for beasts of venery and chase, as they are in company, are these: they say, a *herd* of harts, and all manner of deer; a *bevy* of roes; a *founder* of swine; a *rovt* of wolves; a *riches* of martens; a *brace* or *leash* of bucks, foxes, or hares; a *couple* of rabbits or conies.

There are also terms for their lodging; a hart is said to *barbour*; a buck *lodges*; a roe *beds*; a hare *seats*, or *forms*; a coney *sits*; a fox *kennels*; a marten *trees*; an otter *waiches*; a badger *carths*; a boar *couches*.

Hence, to express their dislodging, they say, *unbarbour* the hart; *rouse* the buck; *start* the hare; *bolt* the coney; *unkennel* the fox; *untree* the marten; *vent* the otter; *dig* the badger; *rear* the boar.

The terms for their noise at rutting time are as follows: a hart *belleth*; a buck *growns* or *troats*; a roe *bellowes*; a hare *beats* or *taps*; an otter *whines*; a boar *freams*; a fox *barks*; a badger *sbricks*; a wolf *howls*; a goat *rattles*.

Terms for their copulation: a hart or buck goes to *rut*; a roe goes to *tourn*; a bear goes to *brim*; a hare or coney

goes to *buck*; a fox goes to *clicketing*; a wolf goes to *match* or *make*; an otter *hunteth* for his kind.

Terms for the footing and treading: of a hart we say, the *slot*; of a buck, and all fallow deer, the *view*; of all deer, if on the grass, and scarce visible, the *foiling*; of a fox, the *print*; and of other the like vermin, the *footing*; of an otter, the *marks*; of a boar, the *track*; the hare, when in open fields, is said to *fore*; when she winds about to deceive the hounds, the *doubles*; when she beats on the hard highway, and her footing comes to be perceived, she *pricketh*; in snow, it is called the *trace* of the hare.

The tail of a hart, buck, or other deer, is called the *single*; that of a boar, the *wreath*; of a fox, the *brush* or *drag*; and the tip at the end, the *chape*; of a wolf, the *stern*; of a hare and coney, the *feut*.

The ordure or excrement of a hart, and all deer, is called *fecumets* or *seawmisking*; of a hare, *crotils* or *croifing*; of a boar, *lesses*; of a fox, the *billoting*; and of other the like vermin, the *fuants*; of an otter the *sprints*. As to the heads of deer, something has already been spoken under the article *HEAD*.

For the attire or parts thereof, those of a stag, if perfect, are, the *bur*, the *pearls*, the little *knobs* on it, the *beam*, the *gutters*, the *antler*, the *sur-antler*, *royal*, *sur-royal*, and all at top, the *croches*; of the buck, the *bur*, *beam*, *brow-antler*, *back-antler*, *advancer*, *palm*, and *spellers*.

If the croches grow in the form of a man's hand, it is called a *palmed head*. Heads bearing not above three or four, and the croches placed aloft, all of one height, are called *crowned heads*. Heads having double croches, are called *forked heads*, because the croches are planted on the top of the like forks.

They say a *litter* of cubs; a *nest* of rabbits; a squirrel's *dray*.

The terms used in respect to the dogs, &c. are as follow: of grey-hounds, two make a *brace*; of hounds, a *couple*; of grey-hounds, three make a *leash*; of hounds, a *couple* and *half*:—they say, let *slip* a grey-hound; and *cast off* a hound: the string wherein a grey-hound is led is called a *leash*; and that of a hound a *lyame*: the grey-hound has his *collar*, and the hound his *couple*: we say a *kennel* of hounds, and a *pack* of beagles.

HUNTING, *styles* or *manners of*, are various, according to the country, the beast, and the means whereby he is to be caught.

Hunting, as practised among us, is chiefly performed with dogs; of which we have various kinds, accommodated to the various kinds of game: *hounds*, *grey-hounds*, *staunch-hounds*, *blood-hounds*, *terriers*, &c. See *DOG*, *HOUND*, &c.

In the kennels or packs, they generally rank them under the heads of *enterers*, *drivers*, *flyers*, *tyers*, &c.

On some occasions, nets, spears, and instruments for digging the ground are also required: nor is the hunting-horn to be omitted. See *HORN*.

The usual chases among us are, the *hart*, *buck*, *roe*, *hare*, *fox*, *badger*, and *otter*. We shall here give something of what relates to each of these.

With regard to the seasons of hunting: hart and buck hunting begins at the end of fence-month, which is a fortnight after Midsummer, and lasts till Holy-rod-day. The hind and doe come in course on Holy-rod-day, and last till Candlemas. Fox hunting comes in at Christmas and holds till Annunciation.

Roe hunting begins at Michaelmas and ends at Candlemas. Hare hunting commences at Michaelmas, and goes out at the end of February. Where the wolf and boar are hunted, the season for each begins at Christmas; the first

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ending at the Annunciation, the second at the Purification.

Here, too, is the place for some general terms and phrases, more immediately used in the progress of the sport itself; what belongs to the several sorts of game in particular, being reserved for the respective articles.

When the hounds, then, being cast off, and finding the scent of some game, begin to open and cry, they are said to *challenge*; when they are too busy before the scent be good, they are said to *babble*; when too busy where the scent is good, *bawl*; when they run it end-ways orderly, holding in together merrily, and making it good, they are said to be in *full cry*; when they run along without opening at all, it is called *running mute*.

When spaniels open in the string, or a grey-hound in the course, they are said to *lapse*.

When beagles bark and cry at their prey, they are said to *yearn*.

When the dogs hit the scent the contrary way, they are said to *draw amiss*.

When then they take fresh scent, and quit the former chase for a new one, it is called *hunting change*.

When they hunt the game by the heel or track, they are said to *hunt counter*.

When the chase goes off, and returns again, traversing the same ground, it is called *hunting the foil*.

When the dogs run at a whole herd of deer instead of a single one, it is called *running riot*.

Dogs set in readiness where the game is expected to come by and cast off after the other hounds are passed, are called a *relay*. If they be cast off before the other dogs be come up, it is called a *vaultlay*.

When, finding where the chase has been, they make a proffer to enter, but return, it is called a *blemish*.

A lesson on the horn to encourage the hounds is named a *call* or *recheat*. That blown at the death of a deer is called the *mark*. The part belonging to the dogs of any chase they have killed is the *reward*. They say, *take off* a deer's skin; *strip* or *case* a hare, fox, and all sorts of vermin; which is done by beginning at the snout, and turning the skin over the ears down to the tail.

HUNTING, *Laws relating to*. See GAME.

Notwithstanding all the game laws, and the various qualifications for hunting pointed out by statutes, which imply a power for persons so qualified to hunt, yet, according to judge Blackstone, no man but he who has a chase, or free-warren, by grant of the crown or prescription, which supposes one, can justify hunting or sporting upon another man's soil; nor indeed, in thorough strictness of common law, either hunting or sporting at all. By stat. 1 Hen. VII. c. 7. unlawful hunting in any legal forest, park, or warren, not being the king's property, by *night*, or with *painted faces*, was declared to be single felony. But now by the statute 9 Geo. I. c. 22. to appear armed in any enclosed forest or place where deer are usually kept, or in any warren for hares or conies, or in any high road, open heath, common, or down, by day or night, with faces blacked or otherwise disguised, or (being so disguised) to hunt, wound, kill, or steal any deer, to rob a warren, or to steal fish, or to procure by gift or promise of reward any person to join them in such unlawful act, is felony without benefit of clergy. Persons so hunting are liable to actions of trespass by the possessors of the land. Comment. vol. ii. p. 418, and vol. iv. p. 174. See TRESPASS.

HUNTING, *Badger*. A badger is called by several names *viz.* a *grey*, *brock*, *boreson*, or *bauson*: the male is called a *badger*, or *boar-pig*, and the female a *fove*. See URSUS MILV.

This beast is very frequent in Italy, Sicily, the Alpine, and Helvetian coasts; and is not uncommon in France and England. It is found also as far north as Norway and Russia; in Siberia, about the rivers Tom and Lena; it inhabits China, and is exposed to sale for food in the markets of Peking.

The badger is a very sleepy beast, especially in the day-time, seldom stirring abroad but in the night; whence the denomination *lucifuga*, q. d. *avoider of the light*. It burrows under ground like the fox, and forms several different apartments, though with only one entrance, carrying in its mouth grafs in order to form a bed for its young. It is so clearly an animal, that it never obeys the call of nature in its apartments, but goes out for that purpose. It breeds only once in a year, and brings four or five at a time.

The badger is a deep biting beast, having very sharp teeth; to guard against the effects of which, it is usual to put great broad collars about the dogs' necks. He fights on his back, and by this means is at liberty to use both his teeth and nails. He has a faculty of blowing up his skin after a strange manner, by which he defends himself against any blow or bite of the dogs; so that you may thresh on his back till you are weary to no purpose: but a small stroke on the nose dispatches him presently. The skin of the badger, when dressed with the hair, is used for pistol furniture. The Highlanders make their pendant pouches of it. The hair is often used for making brushes to soften the shades in painting, called sweetening tools. These animals are also hunted in the winter nights for the sake of their flesh, for the hind quarters may be made into hams, not inferior in goodness to the best bacon. The fat is much valued for ointments and salves.

The method of hunting the badger is thus: seek the earth and burrows where he lies, and in a clear moonshine night go and stop all the holes but one or two, and therein place sacks, fastened with drawing strings, which may shut him in as soon as he strains the bag. The bags thus set, cast off your hounds, and beat all the groves, hedges or tufts within a mile or two: the badgers that are abroad being alarmed by the dogs, will straight repair to their earths, and soon be taken. He that stays to watch the sacks must stand close, and upon a clear wind, or else the badger will find him, and fly some other way for safety. If the hounds either encounter him, or undertake the chase before he can get into his earth, he will stand at bay like a boar, and make excellent sport.

If the badger be attacked in his earth, as soon as he perceives the terriers yearn him, he will stop the hole between the dogs and himself; and if the dogs continue baying, he removes his baggage with him, and goes into another apartment or chamber, of which he usually has half a dozen in the burrow; thus retreating from one to the other, till he can go no farther, and barricading the way as he goes. In hunting the badger as well as the fox, a man cannot justify breaking the soil, and digging him out of his earth.

Another mode of catching badgers is by a "pit-fall" across their accustomed path. This should be five feet deep and four feet long, narrow at the top and bottom, and wide in the middle. This pit must be covered with small boughs or sticks, which retain their leaves (either withered or green, according to the season): they must be so laid, that the weight of the badger when he treads upon them will instantly make them give way. The digging of badgers is, without very good terriers, a work of time: for if terriers do not keep constantly at him, from his facility in penetrating and throwing back the earth (which he possesses beyond any other animal) he will, in loose sand, bury himself faster than the workmen.

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workmen can sink pits, by which he may be got into an angle.

HUNTING, Boar. See **BOAR.**

HUNTING, Buck, or hunting fallow deer. See **BUCK**, and **CERVUS Dama.**

The female is called *doe*, or *doo*: the first year a *fawn*; second, a *togg*; the third, a *doe*. See **DEER**.

Less art and skill are required in lodging a buck, than in harbouring a hart or stag; nor does there need so much drawing after; it is sufficient that you judge by the view, and mark what grove or covert he enters; for he does not wander and rove so often as a hart, nor so frequently change his layer. When hard hunted he usually takes to some strong hold or covert, with which he is acquainted; not flying far before the hounds, nor crossing nor doubling, nor using any of the subtleties the hart is accustomed to.

The buck will beat a brook, but seldom a great river as the hart, nor can he stay so long at foil.

The greatest subtilty a huntsman need use in hunting the buck, is to beware of hunting counter or change, because of the plenty of fallow deer, which use to come more directly upon the hounds than the red deer do.

The buck herds more than the hart, and lieth in the driest places; but if he be at large, unconfined in a park, he herds but little from May to August, because the flies trouble him. He takes delight in hilly places, but chooses the dales to feed in.

HUNTING, Fox. See **FOX**. His nature, in many respects, is like that of a wolf; and both bring the same number of cubs at a litter: but the fox litters deep under ground, which the wolf does not.

The fox sleeps much and sound during the day, and, like the dog, lies in a round form, and may be approached without waking him; but he is in motion and seeking his prey the whole night. When only reposing himself he stretches out his hind legs, and lies on his belly: in this position he spies the birds, as they alight near him, and is ready to spring upon such as are within his reach. Crows, magpies, and other birds, which consider the fox as a common enemy, have such an antipathy to him, that they often give notice of his retreat, by the most clamorous notes. Jays and blackbirds, in particular, will incessantly repeat the watch cries; and when the hounds are in chase of him, crows and magpies will follow him with their screams from tree to tree to a considerable distance, and not unfrequently, when hounds are at a check, indicate which way the fox has shaped his course. The fox has proverbially a strong and offensive smell; he has also a yelping kind of bark, which consists of a quick succession of similar tones, at the end of which he generally raises his voice, like the cry of the peacock. In winter, and especially during frost and snow, and when going to clicket, he yelps much; but in summer he is almost entirely silent; and during this season he casts his hair.

A bitch fox is hard to take when breeding and with cub, in regard she lies near her burrow, into which she runs upon hearing the least noise: indeed it is no easy matter to take her at any time, as being a beast of exceeding subtilty. After littering, if she perceives her retreat is discovered, she carries off her cubs, one by one, to a more secure situation.

What makes fox-hunting the more entertaining, is the strong hot scent this creature affords, which keeps up an excellent cry; but as his scent is hotter at hand, so it dies sooner than that of a hare, &c. Add, that he never flies far before the hounds, as not trutting to his legs or the champaign ground, but has recourse to the strongest coverts. When he can no longer stand up before the hounds, he takes

earth, and must be dug out. When coursed by grey-hounds, on a plain, his last refuge is usually to piss on his tail, and flap it in their faces as they come near him; sometimes squirting all his thicker excrement upon them, to make them give over their course.

When a bitch fox goes a clicketing, and seeks the dog, she cries with a hollow voice, not unlike the howling of a mad dog; and the like noise she makes when she misses any of her cubs: but she never cries at all when she is about to be killed, but defends herself in silence to the last gasp.

The fox is taken with hounds, grey-hounds, terriers, nets, and gins. Of terriers there are two sorts: the one crook-legged, and commonly short-haired, which take earth well, and lie long at fox or badger; the other is shagged, and straight-legged, which will not only hunt above ground as others, but also enter the earth with great fury, though these cannot stay in so long on account of their vehemence.

The fox chuses to earth in ground hard to dig: as in clay or stony ground, or amongst the roots of trees; and his earth has commonly but one hole, which goes straight along in, before it comes at their couch; he sometimes by craft possesses himself of a badger's old burrow, which has variety of chambers, holes, and angles. Gesner relates, that he frequently cheats the badger of his habitation, by laying his excrement at the mouth of the other's burrow.

The modes of hunting the fox formerly, and that practised at present, are very different. In the earliest days, when this country was far more woody, and foxes so much abounded, as to be in a degree like wolves a general nuisance, what was then termed fox-hunting was effected by a great number of people, with dogs of all kinds, who assembled at the coverts where the foxes harboured. And whilst some beset the place, others went into the woods with some of the dogs and forced them out, to be either coursed by the rest of the dogs, which were held ready to be slipped at them, or they were taken in nets and hays set on the outsidcs for that purpose.

As the covers were reduced in size and number, this system of self-defence against the fox's depredations, gave rise to the chase as an object of amusement; the season for hunting them began in November and ended in March, as in the cold weather the fox was supposed to leave a stronger scent; the earths were stopped in the course of the night before hunting, (which is perhaps the *only* point in which the fox-hunting of the former and present time concurs,) a huntsman was appointed, whose business was to take all his dogs in *couples* and *barrelled*, early the following morning to the wood designed to be tried, there to throw off his sure finders or *staunch hounds*, that would undertake no other scent, but that of the fox; if they struck upon a drag, he cast off more of his best hounds, and so continued to do until they ran the drag up to the fox's kennel, which was the most opportune moment to throw off the major part of the coupled hounds; the fox, finding himself thus hotly pursued, after trying to hunt the hounds, was compelled to forsake the cover and trutt to his feet, fleeing from wood to wood, and sometimes extending his course for twenty miles; the huntsman on *foot* was to cross (with what hounds he had in reserve) the nearest cut from cover to cover, and to be as much as possible in the way to throw off those fresh hounds, either as an encouragement to the finders or staunch hounds that might begin to run lag, and which he was also to encourage by all possible means, or he was to keep back this *corps de reserve*, to have them, as occasion might offer, ready for a dead scent, or, as he judged prudent, for the latter end of the day. When the fox was killed the pack was to be all hallooed in to bay him, but they were not allowed to eat

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him, because his *flesh was hurtful* to them; his fat was however in high esteem for shrunk sinews.

If the fox ran to ground, the huntsman, who was to be provided with good terriers, was to lay him up in the earth, which, in the opinion of some, was sooner done by putting a collar of bells on the terrier's neck; when dug out, he was sometimes given to the hounds to be killed on the earth as an encouragement, and also to make them lie when they came to a strange wood and to an unknown earth, at other times he was reserved alive for a future day's sport; if the earth proved so deep that it was impossible to dig him out, steel-traps were set at the mouth of the hole, or hay nets pitched round it, to take him at his going off, and these implements were to be carefully watched.

The whole art of fox-hunting, says Daniel in his "Rural Sports," is to keep hounds (see HOUND) well in blood; and therefore every advantage is taken of the fox. Sport is a secondary consideration with a true fox-hunter: his first motive is the killing of the fox, by which he makes his hounds: present success is almost a sure fore-runner of future sport, and he is better pleased with an indifferent chase with death at the close of it, than with the best chase possible, if it terminates with the loss of the fox. Good chases are, generally speaking, long ones, and if unsuccessful, do more harm than good to hounds. It will be an advantage to hounds when out of blood to go out early. The morning is the part of the day which usually affords the best scent, and the animal itself, which you are at this time more than ever desirous of killing, is then least able to escape; the want of rest, added perhaps to a full belly, gives hounds a decided superiority over an early-found fox. Hounds should never be taken out in a very windy or bad day, because scent is at such times extremely precarious. (See SCENT.)

Two things, says Mr. Daniel (*ubi supra*), are ever to be remembered and accomplished in fox-hunting; the one is, to make hounds *steady*, the other to teach and compel them all to *draw*; never suffer any hounds out of cover, it is the effect of bad management if they attempt to be so; hounds once become steady will be more likely to draw well than if they were not, their eagerness is then to find their proper game, and they are indifferent to the scent or view of any other. Many huntsmen are fond of having hounds at their *horse's heels*, and it is a modern fashion for the huntsman and whippers-in to *ride into* the cover, and by their noise, in some measure, to *find* the fox for their hounds; but this proceeding invariably renders hounds *bad drawers*, independent of the great chance of stubbing the horses, which in an inclosed country too often occurs, without needlessly courting the danger; it is liable also, where there are but few finders, to have a fox found by them, which goes down the wind, and they are heard of no more that day; besides, hounds never get so well or so soon together as when they spread the cover.

There is infinite pleasure, says a sportsman, in hearing when a fox is well found, the chorus increasing from the first challenge, and the corresponding "Hark to Chirper" inspires a joy more easy to be felt than described; and one fox found with a good drag in this lively manner, surpasses the best hare chase that was ever ran.

Much also depends on the first finding a fox, who, if well found, may be said to be half killed. The huntsman should draw quietly, and *up the wind*; this is material; the fox, by drawing up the wind, does not hear the approach of the hounds, who by this means are also within hearing; besides, should the fox turn down the wind, as most probably he will, it lets the hounds all in. If covers are small, and

from which a fox cannot break unseen, *noise* can then do no hurt, but late in the season foxes are wild, particularly in covers that are often hunted, and should there be any noise, they will sink their kennels and get too much advantage; the whipper-in, where this is suspected to happen, should get the opposite side of the cover, *before* the hounds are thrown into it.

Judicious huntsmen will observe where foxes like best to lie; this must of course vary in different countries, and a knowledge of the country will best direct them in this respect. Where there are large tracts of cover, such observation will save time in finding; generally speaking, foxes prefer covers that lie high, are dry and thick at bottom, that are out of the wind, and are on the sunny side of hills. The cover where a fox is found, when it has remained still any time, will probably produce a second. In nutting time, *furze brakes* and two or three years coppices are then the only quiet places for a fox to kennel in; when pheasant shooting begins, older covers are more likely. The season when foxes are most wild and strong, is near Christmas; a huntsman must at that season lose no time in drawing, and be as silent as possible; three or four years coppices, with *beath or furze at bottom*, are then most likely. The *male* foxes, about Christmas, travel miles after the *females*, and when hunted, generally run directly for the country *from whence* they came; the huntsman has at that season, in the course of three weeks, killed two brace of dog foxes from one cover, where the least distance was twelve, and in one of the four chases was extended to double the number of miles, from the place of unkennelling, to the spot where the fox was killed.

When a string of small covers have plenty of foxes in them, some caution is necessary to prevent them being all disturbed in one day. Foxes are said to go *down wind to their kennel*, but however that may be, the huntsman should begin drawing at the farthest cover down the wind, and proceed from cover to cover *up the wind*, till he finds; these advantages will attend it, he will draw the covers more speedily, there will be less difficulty in getting hounds away, and as the fox most likely will run the covers already drawn, there is the less probability of *changing*, and the covers which are up the wind, *beyond* where the fox is found, remain perfectly undisturbed.

Never hunt the small, until the large covers have been well rattled; for it would be bad policy to drive from the former to the latter to increase the number. If foxes are meant to be thinned and dispersed, hounds must throw off at the same cover, so long as a fox can be found. Hounds that come away with the first fox that breaks, do not disturb the cover, and may expect to find there again the next day; but where foxes are scarce, the same cover should never be drawn *two days following*.

Furze covers cannot be drawn too close, and if a fox is there found, he should never be halloed until *quite clear* of them; from such places, hounds are sure to go off well with him, and it would be the height of cruelty to head him back into the hounds mouths.

Long drags in large covers give advantage to the fox, who frequently takes the hint and sets off; this may be prevented, by throwing hounds into that part of the cover where he is most likely to kennel, the huntsman should then be careful not to take the *heel* of the drag. When a fox gets so far the start of hounds, that they are obliged to hunt after him with a bad scent, if foxes are in plenty, they had better be stopped, and find another; yet if this was a constant practice, it might make the hounds indifferent when upon a *cold scent*, and hounds should be made to believe,

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they are to kill *that game* which they are *first* encouraged to pursue.

When hounds approach a cover intended to be drawn, and dash away towards it, whippers-in ride to stop them; they had better let them alone, it checks their drawing; and it will be soon enough to rate, when they have found and hunt improper game. Some hounds will in this dashing style break away from the huntsman, rush to the cover side, and then stop and not go into it; but hounds under such good command as not to break off from the huntsman until he encourages them, will be then so confident, that they will not return to him again, but proceed to find their game with an eager steadiness.

Whilst hounds are drawing, the company should place themselves so that a fox cannot go off unseen. Gentlemen should take this necessary part of fox-hunting to themselves; upon those occasions, when two gentlemen are seen *together*, it is a reasonable conclusion, that one of them at least knows nothing of the matter. The greater number of those who ride after hounds are no sportsmen; few gentlemen will take pains to stop a hound, although he should run riot close beside them, or will stand quiet a moment although it is to halloo a fox, and thereby to promote the amusement they are come in search of.

The first day a cover is hunted, where there is plenty of foxes, and blood is wanted, let them not be headed back into the cover, which is the usual practice, but allow some of them to get off, otherwise with continual *changing*, and sometimes running the *heel*, it is probable the hounds will not kill any. Another precaution may be also necessary, that is, to stop such earths *only as cannot* be digged; if some foxes go to ground, and blood be wanted at last, it will then be known where to get it.

Covers *near the kennel* should not be drawn while foxes can be found elsewhere, it will render them certain places when hounds go out late, or may otherwise be in want of foxes; they should not be much disturbed after Christmas, foxes will then resort to, and breed in them, and there they can be preserved with little trouble.

Before hounds are drafted, let the huntsman determine within himself the number it will be proper to take out, and also what young hounds he can venture in the country he is going into. Much accuracy is required in drafting hounds properly, nor can it be done with any expedition, without some method. Too many huntsmen deem it immaterial, which they take or which they leave, provided they have the number requisite. A perfect knowledge in feeding and drafting hounds, is the most essential part of fox-hunting; good hounds will need but small assistance afterwards. By *feeding*, is meant the bringing the hound into the field in his highest vigour, and this can be done but by a discernment of the different constitutions of so many animals, some of which must be fed sparingly, and yet frequently, to maintain the full force of their powers. By *drafting*, is particularly meant the taking out no unsteady hound, nor any that are not likely to be of service to the pack. To hunt two days following with a small pack, calls forth the greatest nicety to make the molt of it; some consideration is also necessary to place hounds to the greatest advantage, where foxes are either plentiful or very scarce; a huntsman should be able to marshal every hound, giving to each his proper rank; without this knowledge, he cannot make a draft as he ought. There are in molt packs some hounds that aid little in *killing* the fox; it is the *judicious drafting off* such hounds, that is a certain sign of an *intelligent* huntsman.

When foxes are numerous, there is no occasion for an

early hour, and when they are weak, by hunting late, they give better chases; when foxes are strong, hounds ought then to have the advantage which hunting early affords them. When hounds go out late, they should immediately proceed where it is likely to find, which, for the most part, is that cover where hounds have been least in; if a fox is not soon found, a long and tiresome day is generally the consequence; when the cover is thick, particularly if it be *furzy*, it should be drawn slowly, a fox at a late hour will keep his kennel, until hounds come close upon him.

A huntsman, although he ought to be as silent as possible when his hounds go into a cover, cannot be too noisy at their coming out of it again; and if at any time he should turn back suddenly, let him give as much notice of it as he can to his hounds, or many will be left behind, and should he turn *down* the wind he may see no more of them.

Gentlemen are generally in too great haste when a fox is first found, hounds are always mad enough when they find, and the enthusiasm attending this diversion, is at this crisis particularly to be restrained; it is quite time enough for it to appear when hounds are away, and well settled to the scent. The huntsman should set off with the foremost hounds, no hounds can then slip down the wind, and get out of his hearing; but in pressing hounds forward whilst the scent is good, care is to be taken that they are not hurried beyond it when it is bad; he should keep so close to them as to enable him to see how far they carry the scent, without this, he can never make a cast with any certainty. It is the huntsman's business to be ready at all times to lend that assistance, which when they are first at a fault is then most critical, a fox-hound at that moment will exert himself most, he afterwards becomes more indifferent about his game. Those huntsmen who do not get forward enough to take advantage of this eagerness, and direct it properly, are seldom sufficiently skilled in hunting to be of much use to hounds afterwards.

With a high scent, hounds cannot be pushed on too much; screams keep the fox forward, the hounds together, or let in the tail hounds, they enliven the sport, but in cover, should be given with the greatest caution; halloos are of service when hounds are running up the wind, for then none but the *tail hounds* can hear them; when running down the wind, there should be no more halloos than are necessary to bring the tail hounds forward, for hounds that know their business, when upon a scent, rarely want encouragement.

When hounds are at a check, every one should be silent and stand still; the huntsman had better let the hounds alone, or content himself with holding them forward, without taking them off their noses; should they continue at fault after having made their own cast, (in which not a word should be said to them, and which the huntsman should always first encourage them to do, as they will of themselves spread more, and try better for the scent than he can make them;) it is then his business to assist them, but except in some very particular instances, such as to get beyond the *taint of sheep*, or where a fox has been *coursed* by farmers' dogs; (in the former case, much time is saved in keeping hounds forward, and not suffering them to try through a flock of sheep; and in the latter it is the only chance of getting hounds to hit upon the scent, or its at all serving them to hunt up to their fox afterwards;) without these reasons, or others equally urgent, hounds should never be cast so long as they are inclined to hunt. It is the judiciously preventing hounds from losing time by hunting when they might run, and the encouraging them to hunt when they cannot run, that shows a good sportsman; for though too

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much help will make them slack, too little will make them tye on the scent and hunt back the heel. The huntsman should observe the tail hounds, they are least likely to overrun the scent, by them he may see how far they brought it; in most packs there are some hounds that will shew the point of a fox, which, if attended to, may direct his cast; when such hounds follow slowly and unwillingly, he may be certain the rest are running without a scent; but a huntsman should by no means turn back on seeing hounds at head when first at a check, of which he has no opinion; they may be right, and he should by a short cast forward be sure they are wrong, before his own suppositions of the fox being gone another way, are to be indulged.

When hounds are at fault, staring about and trusting to their eyes and ears, a forward cast is the least likely to regain the scent; the place where they left, is the most probable spot for them to hit the scent, and hounds knowing where they left the scent will there try to recover it, nor is a wide cast often to be made without good reason; the scent should be tried to be retrieved by *crossing the line* of it, and a huntsman, by attending to this, will not fail to make a good cast, if he observes the point of the fox. When hounds cannot lit off a fault by themselves, the first cast should be speedy, the scent is then good, and hounds not likely to go over it. Every huntsman should adopt these rules; with a good scent his cast should be *quick*, with a bad scent, *slow*, and when hounds are picking along a cold scent, *he is not to cast them at all*.

When a fox is killed, hounds should eat him ravenously: he should be flung across the branch of a tree, and the hounds suffered to bay him for some minutes before he is thrown amongst them, it will shew hounds the meaning of *tally ho*, and learn them to fly like lightning to it; it will also make the hounds more eager, will let them all in, they will recover their wind, and eat him more readily.

When a fox is suspected to be gone to ground, the huntsman should try all round, and be perfectly satisfied that the fox is not forward, *before* he tries the earth, as a fox will frequently run over an earth, and sometimes go into, and not stay in it. When a fox goes to ground, after a long chase, and hounds want blood, it is best to kill him *on the earth*, the holes should be all stopped whilst digging, lest he should bolt; when this happens, it causes no small confusion, the hounds are dispersed and asleep in different places, the horses often at a distance, and many a fox by taking this advantage of the moment has saved his life.

With respect to the digging of foxes which hounds run to ground, if the hole be straight and earth slight, follow it, and in following the hole, by keeping below its level, it cannot be lost; but in a strong earth, the best way is to let the terrier fix the fox in an angle of it, and a pit be then sunk as near to him as can be, a terrier should always be kept at the fox, who otherwise may move, and in loose ground dig himself further in; in digging keep plenty of room, and take care to throw the earth where it may not have to be moved again.

The time for leaving off hunting, as much depends upon the quantity of foxes as on the country hunted; no good country should be hunted after *February*, nor should there, where hounds regularly hunt in the season, be any hunting *at all after March*. Spring hunting is sad destruction to foxes, and ought not to be attempted but in countries never visited by hounds in the hunting season, or where the foxes are wished to be destroyed by wholesale; in one week, hounds by killing a brace or two of bitch foxes, either in cub, or that have just littered, murder as many as would shew diversion for a whole season.

Notwithstanding the *common* law allows of the hunting of foxes and badgers (being beasts of prey) in another mans' ground, because their destruction is a public benefit, and by the old law the parish officers are to give a certain sum by the head for both male and female, to promote it;) yet the digging and breaking the ground to unearth them, is held to be unlawful, and in the case of Gedge v. Minne, it was determined, that the defendant could not justify digging for a badger; the breaking ground to *stop* an earth is also illegal, and the owner of the ground may maintain an action of trespass; it was also decided in the aforementioned case, that if a person goes into the ground of another, to beat or draw for a fox or a badger in order to hunt it, this action for trespass lies. Daniel's Rural Sports, p. 84—133.

HUNTING, *Hare*. A hare the first year is called a *leveret*; the second year, a *bare*; the third, a *great hare*. See HARE.

Each part and member of the hare is formed for celerity. The head is round and short, of a convenient length; the ears long and lofty, to hear the enemy at a distance, and save itself in time; the lips continually move, sleeping and waking; and the eye is too big and round for the lid to cover it, even when asleep; so that the creature sleeps as it were on the watch. Straight forward there is a deficiency in the hare's sight, so that when closely pursued she will run against objects in her way. The breast is capacious, and fitted to take more breath than that of any other beast. They feed abroad, to conceal their forms; and never drink, but content themselves with the dew. The hare's ears lead the way in her chase; for with one of them (it has been said) she hearkeneth to the cry of the dogs, the other being stretched forth like a sail to promote her course.

Others, however, have asserted that this notion is ridiculous. Whenever the hare pricks her ears on end, or draws one apart from, or more forward than the other, it is to listen more distinctly on that side the forwardest ear inclines; had Nature designed any singular aid to her *feet* from stretching forth the ears, she would have supplied her with *two pair*, one to lie flat upon the shoulders for listening, whilst she sailed by the other, and never would she have had more occasion for *both*, than when severely coursed, at which time, the ears she has may be observed to lie close to the neck; and although she is compelled, when thus pressed, to try every shift to escape, this quality of *sailing* by the ears is never seen; both ears are very strictly applied to catch the smallest sound of the greyhound *behind*, by which she accordingly retards or increases her celerity.

The hares of the mountains often exercise themselves in vallies and plains, and through practice grow acquainted with the nearest way to their forms; those which frequent bushes and brakes are not able to endure labour; nor are very swift, being tender footed, and growing fat through discontinuance of exercise.

When the hare has left the dogs far behind, she goes to some hill or rising ground, where, rearing on her hinder legs, she observes at what distance her pursuers are.

The trail, *i. e.* the path which the hare takes in going to her seat is long, says Xenophon, in his Observations upon Hare-hunting, in proportion to the length of the night. In the winter, he says, there is no scent early in the morning, when either a hoar or a hard frost occurs. The trail is also spoiled by much dew, and by showers after a long drought.

The scent is naturally stronger in wood-hares than field-hares; but in all sorts it is strongest when they feed on green corn. The scent of young hares is said to be stronger than that of those full-grown, the weakness of their limbs suffering the whole body to touch the ground. In winter mornings,
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the scent does not lie till the frost be a little thawed; and it may be added, that a hare always leaves more scent when she goes to relief, than when she goes to form.

Her footsteps are more seen in winter than summer; because, as the nights are longer, they travel farther. Their prints are very uncertain at the full moon, at which time they leap and play together. The young, it is to be observed, tread heavier than the old, because their limbs are weaker. A buck, or male hare, is known by his beating the hard highways, feeding farther out in the plains, and making his doublings of a greater compass than the female, who keeps close by some covert side; turning, winding, and crossing in the bushes, like a coney, and rarely running out an end; whereas the buck, having once made a turn or two about his form, runs straight forward for four or five miles, or more, without once turning his head. Add, that the buck is known, at his rising out of form, by his hinder parts, which are more white, and his shoulder, which is redder than the doe's. His head is also shorter, and his ears more grey.

The hare regulates its conduct according to the weather. In a moist day she holds the highways more than at any other time, because the scent is then most apt to lie; and if she come at the side of any young grove or spring, she forbears to enter, but squats down at the side, till the hounds have overhot her; upon which she returns the same way she came, without turning into any covert, for fear of the wet and dew hanging on the boughs.

Regard is also to be had to the place where the hare sits, and upon what wind; for if her form be either upon the north or south wind, she will not willingly run into the wind, but aside, or down the wind; on the contrary, if she form on the side of the water, it is a sign she is foul and measles, and in the course will make all her doubling and crossing about brook-sides and near plashe; for her scent, under this condition, being very strong, she needs a place that will take but little. Sometimes, when hunted down, she will start a fresh hare, and squat in the same form; at other times, she will creep under the door of a sheep-cote, and hide among the sheep, or run among a flock of sheep, and will not, without the utmost difficulty, be taken from among them. Add, that some will take the ground like a coney: this is called going to *wault*.

Some hares will go up one side of the hedge, and come down the other; and it is said that a hare, being forely hunted, has got upon a quickset hedge, and ran a good way on the top of it, and then leaped off upon the ground; and that it is no unusual thing for them to take themselves to furze-bushes, and leap from one to another, whereby the hounds are frequently in default. These accounts, however, are disregarded by some as fabulous.

A hare, it is said, does not live above seven years at most, especially the buck; and if he and the doe keep one quarter, they will not suffer any strange hare to sit by them: whence the proverb, "The more you hunt, the more hares you shall have;" since, having killed one hare, another comes and possesses his form.

In entering a young kennel of hounds, regard must be had to the nature of the country and of the quarry; for, according to the place wherein they are entered, and the game first given them, will they afterwards prove. Thus, if they be entered in a champaign country, they will ever after more delight to hunt there than on any other ground. The best time, it is said, for the entering of hounds is in the heat of the day, and about October or November, the weather being then temperate, and young hares that have not been hunted, are more easily taken

for their encouragement. Hounds, after the age of two years, should be hunted three times a week, if they feed well, and may be kept out the greatest part of the day, to try their strength. See ENTRANCE and HOUND.

Having found where a hare hath relieved in some pasture, or corn-field; to find her form, the season of the year, and the state of the weather are to be considered. In the spring or summer, a hare will not sit in the bushes, because frequently offended with pismires, snakes, and adders; but will sit in corn-fields, and open places. In winter they choose to sit near towns and villages, in tufts of thorns and brambles, especially when the wind is northerly or southerly. According to the season, and nature of the place where the hare is accustomed to sit, there beat with your hounds, and start her: which is better sport than trailing of her from her relief to her form. Having started her, step in, and halloo in the hounds till they have undertaken it: crying, *that, that, or there, there*, and go on with full cry; then re-cheat them, and follow at a distance, taking care not to forward them too much at first, as being apt, if the first beat, to overshoot the game. Some of the early sportsmen never permitted the hare to be hallooted, or the hounds to be assisted when they were at fault, but suffered them to work it out by themselves, which, though tedious, was considered as a sure way to ascertain the goodness of the hounds. Above all things, mind the first doubling the hare makes, which is to be a key or direction for the whole day; all the other doublings she afterwards makes being like the first. According to the policies you see her use, and the place where you hunt, make your compass, to help the defaults, great or little, long or short; always seeking the moildest and most commodious place for the hounds to scent in.

A young huntsman, says an ingenious sportsman, should take care, when the scent lies well, always to keep himself far behind. At such a time, especially if it be against the wind, it is impossible for the hare to hold forward, nor has she any mode of escaping, but to stop short, and when all are past, to steal immediately back. This is often the occasion of an irrecoverable fault in the midst of the warmest sport, and is the best trick the hare has for her life in scenting weather. If the huntsman, therefore, is not too forward, he will have the advantage of seeing her manœuvre, and of assisting his hounds at this critical moment.

Upon sight of the hare, avoid, above all things, the vile practice of hallooting hounds off *a scent*, to lay them on after a *view*, it not only spoils the dogs, by accustoming them at every fault to listen for, and expect the halloo, but it is foul sporting; equally unfair and to be condemned is, the suffering the pricks of the hare's footing to be smoothed when she runs the foil; for although it is admitted that by such pricking and discovering her steps, no hare can escape, yet it is an unmanly mode of assisting hounds, which no huntsman, who is a *sportsman*, will ever be guilty of himself, or condescend to make use of when done by others.

The huntsman should never be noisy when a hare is first started; let him not only check his own forwardness, but that likewise of the inexperienced sportsman. Hounds are apt enough in the first heat of their mettle to overshoot their game, and hours of sad sport have happened from driving them too fast. Too many people think a chief part of hunting consists in *hallooting loud and riding hard*, but they are mistaken, and must not be offended should the huntsman swear at their performances. No tongue can be allowed but his, nor, at this peculiar time, ought any one to be more forward.

The chief considerations for the huntsman, when the hounds

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hounds are at default, are, how long the hare has been on foot, and how far the hounds make it good; if she has *not* been long and hard pressed, he must expeditiously try a wide circle, and so persist in contracting his circles, until he returns to the place where the dogs threw up. Should the hare have been drove hard, or be nearly dead run, the huntsman need only try a small compass, and that slowly and cautiously, for she will only leap off a few rods and *quat*, until one or other of the dogs jumps upon her.

A huntsman should be careful of talking too loud to hounds, and in a *key* which instead of cheering confounds them. Give me, says this author, a fellow of everlasting patience and good temper, who does not consider hunting merely as his *business*, but who naturally loves it, one with a clear, moderate voice, that speaks to an old hound when at fault frequently and with quickness, and cherishes him in a tone that enforces courage, and induces him to stoop perpetually to recover the scent. It is by no means the huntsman's business to endeavour by pricking the hare to hit her off; in the first place it is unfair, and, secondly, whilst he is poring with his eyes upon the ground, not one in twenty of the hounds will have his nose to it. If there is a long default, the huntsman should attend to the tender-nosed dog, which perhaps he disregarded in the morning as a *babbler*, and whom he pronounced worthy of a halter for opening at nothing; his superior excellence of scenting may now shew itself to have merited a different judgment, and may encourage some itauncher hound to stoop, which he would not otherwise do.

A huntsman is never to give up a default whilst day-light and weather permit; if the hare is not killed and taken up, there is no good reason why it is not to be recovered, and it should be a standing maxim, that it is always as easy to recover a *loft* hare as to start a *fresh* one.

In the opinion of Mr. Beckford, the number of hounds should not exceed twenty couple in the field, from the difficulty of getting a greater number to run well together, and a pack of harriers (as well as fox-hounds,) are incomplete if they do not. A hound that runs too fast for the rest ought not to be kept. Some huntsmen load them with heavy collars, or tie a long strap round their necks; a better way would be to part with them. Whether they go too *slow* or too *fast*, they ought equally to be drafted. The hounds most likely to show sport are between the large, slow hunting harrier, and the little fox beagle; the former are dull, heavy, and too slow; the latter are lively, light, and too fleet. The first sort have most excellent noses, and will kill their game at last, if the day be long enough. The other, on the contrary, dash and are all alive, but every cold blast affects them, and in a deep and wet country it is not impossible but that some of them may be drowned. His opinion respecting the huntsman is, that he should not be young, and for *patience* he should be a very *Grizzle*; the quieter he is the better, and he should have perseverance and never give up a hare when it is possible to hunt her, as she is sure to stop, and therefore may always be recovered; he jocularly remarks, that were it customary to attend to the breed of huntsmen as well as to that of hounds, the family of the *silent gentleman*, mentioned by the Spectator, would furnish an excellent cross, and that a female of his lineage, married to a knowing huntsman, would probably produce a perfect hare-hunter. The whipper-in to a pack of harriers should not be allowed to stop a hound or smack his whip, without the huntsman's order. Noise and rattle are directly adverse to the first principle of hare-hunting, which is to be quiet and leave the hounds to themselves. If a long fault makes the huntsman's

assistance necessary, and the hare should have headed back, he will observe whether she has turned of her own accord, or has met any thing in her course to turn her. When he casts his hounds, let him begin with a small circle, if that is unsuccessful, try a larger, and as a hare generally revisits her old haunts, and returns to the place where she was first found, if the scent be quite gone, and the hounds can no longer hunt, that is as likely a cast as any to recover her. Let him remember in all his casts, that the hounds are not to follow his horse's heels, nor are they to carry their noses in the air. At these times they must try for the scent, or they will never find it; and he is to make his cast either quick or slow, as he perceives his hounds try, and according to the goodness or badness of the scent.

When hounds are at a check, the huntsman should not move his horse one way or the other. Hounds lean naturally towards the scent, and if nothing be said, will soon recover it: if a hound is spoken to at such a time, calling him by his name, (which is too much practised,) he seldom fails, says Mr. Beckford, to look up, as much as to say, *What the deuce do you want?* Had he the faculty of speech, he would add, before he stooped to the scent again, *You fool, let me alone.* When hounds are at fault, not a word should be said; no other tongue should be heard but that of a hound; and so inflexible was a friend of Mr. Beckford who kept harriers, in this particular, that a gentleman accidentally coughing whilst his hounds were at fault, he rode up to him immediately, and said "*I wish, sir, with all my heart, that your cough was better.*"

When the hare is first started, says Mr. Beckford, sportsmen cannot be too quiet. Hounds through the whole chase should be left almost entirely to themselves, and never be much hallooed; when the hare doubles, they should hunt through these doubles; nor is a hare hunted *fairly* if hunted otherwise; they should follow every step she takes, as well over greasy fallows, as through flocks of sheep, nor should they be ever cast, if able to do any thing without it. On high roads and dry paths, the huntsman should always be doubtful of the scent, nor give them much encouragement; but when a hit is made on either side, it is then right to cheer them as much as you please. A hare generally describes a circle in her flight, larger or smaller, according to her strength and the openness of the country. In enclosures and where there is much cover, the circle is so small that it is a constant puzzle to the hounds. Besides running the foil, they frequently make doubles, which is going forward, to tread the same steps, back again, on purpose to confuse their pursuers; and the same manner in which the first double is made, they mostly continue, whether long or short. This information, says Mr. Beckford, if properly marked by the huntsman, may be useful in his calls. When hares make their doubles on a high-road, or dry path, and then leave it with a spring, it is often the occasion of a long fault: the *spring* which a hare takes on these occasions, is hardly to be credited, any more than her ingenuity in thus trying to escape. Often, after running a path a considerable distance, she will make a double, and stop until the hounds are past her, she will then steal away, and return the same way she came; this is the greatest of all trials for hounds. It is so hot a foil, that in the best packs there are not many hounds that can hunt it; those hounds must be followed that can, and the foil when she breaks it, (which in all probability she will soon do, as she now thinks herself secure,) be tried to be hit off. When the scent lies bad in cover, she will sometimes seem to hunt the hounds. Particular directions, says Mr. Beckford, should be given to the huntsman, to prevent the hounds all in
his

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his power, from *chopping* hares. In furze they lie very close, hedges are also dangerous: the best way is to have the hedge well beaten some distance before the hounds, for if the huntsman beats the hedge himself, as is the general practice, the hounds are always upon the watch, and a hare must have great luck to escape them all. Hares seldom run so gallantly as when they do not know where they are; in a fog they run well; if they set off down the wind, they rarely return, and hounds cannot then be pushed on too much; when the hare is sinking, the old hounds will get forward; they, *then*, will run at *head*.

Keep no *labblers* or hounds that run false; the loss of one hare is more than such dogs are worth.

HUNTING. *Hart or Stag.* (See *CERVUS Elaphus.*) This animal the first year is called a *calf*, or *hind-calf*; the second year, a *knobber*; the third, a *brock*; the fourth a *flaggard*; the fifth a *stag*; the sixth a *hart*.

The female is called a *hind*. The first year she is a *calf*; the second a *bearse*, and sometimes a *brocket's sister*; the third a *hind*.

Terms occurring more especially in hunting the hart, and not yet explained, are as follow. The print or impression, where a deer has lain, is called a *layer*; if it be in covert, or a thicket, it is called his *harbour*; where a deer has passed into a thicket, leaving marks whereby his bulk may be guessed at, it is called an *entry*; when they cast their heads they are said to *mew*; when they rub their heads against trees, to bring off the peels of their horns, they are said to *fray*; when a deer, hard hunted, takes to swimming in the water, she is said to go to *foil*; when they turn head against the hounds, they are said to *bay*; when the hounds touch the scent, and draw on till they put up the hart, they are said to *draw on the slot*.

As to the nature and qualities of the hart, it is to be observed that he is an excellent swimmer; there being instances, when fore hunted, of his plunging in the sea, and being killed by fishermen twelve miles from land. When, in going to rut, they have occasion to cross a great river, or arm of the sea, it is said they assemble in great herds; the strongest goes in first, and the next of strength follows; and so one after the other, relieving themselves by staying their heads on the buttocks of each other.

The hind commonly carries her calf eight or nine months, which usually falls in May: some have two at once; and they always eat up the skin wherein the calf lay. As the young grow up, the old one teacheth it to run and leap, and how to defend itself from the hounds.

The hart is amazed at hearing any one call, or whistle, in his fist; if you cry *ware, ware*, or *take heed*, you will see him instantly turn back, and make some little stand. His sense of hearing is very perfect when his head and ears are erected; but very imperfect when he holds them down: hence when he pricks up his ears, he is known to be apprehensive of danger. When he is on foot, and not afraid, he wonders, and takes a pleasure to gaze at every thing he sees.

The hart is long lived, but less so than some persons have conceived. (See *CERVUS Elaphus.*) The principal marks of his age are taken from his head, yet this is somewhat precarious; some having more croches thereon at the same age than others.

The capture of this beast requires great art and attention. When the hunter goes for sport, he is first to encompass the beast *en son gisle*, in her own layer, and thus unharbour her in the view of the dogs, so that they may never lose her slot or footing. But note, a considerable degree of choice and discretion is here required; for he may not set off upon

every one, either of the herd, or those which wander solitary: the young, the small, &c. are to be passed over; and partly by sight, and partly by the footing, fewmets, the largeness of the layer, &c. he must make judgment of the game, singling out for that purpose the largest head in the whole herd.

There are divers means for knowing an old hart; *viz.* by the *slot*, the *entries*, the *abatures*, and *foils*, the *fewmets*, *gait*, and *walks*, *fraying-stocks*, and the *head* and *branches*. 1. As to the slot. The treadings of the hart's foot are to be carefully noted: if you find the treadings of two, the one long, and the other round, yet equally big, the longest slot declares the largest hart; add, that the old hart's hind foot never over-reaches the fore-foot, as that of the young one does. 2. The fewmishing is chiefly to be judged of in April or May: if it be large and thick, it signifies the hart to be old. 3. To know the height and thickness of the hart, observe his entries and galleries into the thickets, and what boughs he hath over-stridden, and mark from thence the height of his belly from the ground; for a young deer usually creeps low, as he passes to his harbour, and goes through places which the old one, being stiff and stately, will not stoop to. 4. By his gait it may be known whether the hart be large, and whether he will stand long before the hounds: if he have a long step, he will stand long, being swift, light, and well breathed; if he have a great slot, which is the sign of an old deer, he will be a laster. As to his fraying-post, note, that the older the hart is, the sooner he goeth to fray, and the greater is the tree he chooses to fray upon; it being necessary it be such as may not bend. Now, to seek or find out a hart in his haunt, or feeding-place, it is to be observed, that he changes his manner of feeding every month. From the conclusion of the rutting time, which is in November, they feed in heaths and broomy places. In December they herd together, and withdraw into the strength of the forests, to shelter themselves from the severe weather, feeding on holm-trees, elder-trees, brambles, &c. The three following months they leave the herding, but keep four or five in a company, and in the corners of the forest will feed on the winter pasture, sometimes making their excursions into the neighbouring corn-fields, if they can perceive the blades of wheat, rye, &c. appear above ground. In April and May they rest in thickets and shady places, stirring very little till rutting time, unless disturbed. The three succeeding months they are in their pride of graze, and resort to springs, copes, and corn-fields. In September and October they leave the thickets, and go to rut; during which season, they have no certain place either for food or harbour.

Having found out the game, the hunters disengage and cast off the dogs; and some on horseback, others on foot, follow the cry with the utmost art, observation, and speed, remembering and preventing the subtle turning and headings of the hart; standing with dexterity and intrepidity to leap hedge, pales, ditch, &c.

The utmost address and circumspection are to be used to keep to the beast first attempted, and to prevent the dogs from pursuing any other: this, in effect, makes one of the principal difficulties and gories of the chase; the beast having a hundred devices to put off some other head for his own: sometimes he will send forth some other little deer in his stead into the dogs' way, laying close at this time himself; on which occasion the huntsman is to sound a retreat, and break off the dogs, and take them in leam, till the game be recovered.

Sometimes he will purposely seek out other deer at layer, and rouse them to make the hounds hunt change, himself lying

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down flat in some of their layers upon his belly, to make the hounds over-shoot him: add, that they may neither scent nor vent him, he will gather up his fore-feet under his belly, and blow or breath on some moist place of the ground, so that the hounds shall pass within a yard, without apprehending him. He will break into one thicket after another, to find deer, rousing, gathering them together, and herding with them, and even beating some of them into his treads, that he may the more easily escape. Finding himself spent, he will break herd, and fall to doubling and crossing in some hard beaten highway, always running against the wind, not only to cool himself, but the better to hear the voice of his pursuers.

The last refuge of a hart sorely hunted, is the soil; keeping the middle for fear, least by touching a bough, or the like, he may give scent to the hounds. He always swims against the stream; whence the old rule, "He that will his chafe find, let him try up the river, and down the wind." In taking soil, he will sometimes cover himself under water, so as to show nothing but his nose.

Where opportunity of water fails, he will fly into herds of cattle, as cows, sheep, &c. and will sometimes leap on an ox, cow, or the like, laying the fore part of his body thereon, that so touching the earth with his hinder feet, he may leave a small or no scent behind. What is farther still, the chief huntsman of Lewis XII. relates, that a hart which they were in hard chase of, leaped into a great tall white thorn, which grew in a shadowy place, and there stood aloft till he was run through by a huntsman, rather than he would stir.

The hart being killed the huntsman with his horn windeth the fall of the beast; upon which every one approaches: the skilfullest opens the breast, rewarding the hounds with what properly belongs to them; the huntsman, at the same time, dipping bread in the skin and blood of the beast to give the hounds their full satisfaction.

The hart is known to be spent by his running stiff, high, and lampering, by his mouth being black and dry, without foam on it, and his tongue hanging out; though he will sometimes close his mouth to deceive the spectators; and by his slot, for he will sometimes close his claws together, as if he went at leisure, and immediately again open them wide, making great glidings, and hitting his dewlaps upon the ground, &c. When quite spent, and close beset, or intercepted on all sides, the hart usually takes to bay, and makes force with his head against the first man or dog that closes in upon him, unless prevented with a spear, sword, or the like. Hence it is very dangerous going in to a hart at bay, either on land or in the water, especially at rutting time, for then they are more than ordinarily fierce.

The hart being killed, his death is solemnized with great ceremony. The first thing, when the huntsmen come in, is, to cry, *Ware haunch*, that the hounds may not break into the deer: having secured this, they cut his throat, and blood the younger hounds, to make them love deer; and learn to leap at his throat; then having blown the mort, and all the company being come in, the most distinguished person, who has not taken *say* before, takes up the knife, and lays it across the belly of the deer, (some of the assistants holding by the fore-legs, and at the same the huntsman drawing down the pizzle,) and thus he draws the knife along the middle of the belly, beginning near the brisket, cutting deep enough to discover how fat he is. Then the most skilful person breaks up the deer, by first slitting the skin from the cutting of the throat downwards, making the arber, that the ordure may not break forth, and then paunching him, and rewarding the hounds with it.

Lastly, the person that took the *say*, being presented with a drawn hanger, he is to cut off the head; which done, and the hounds rewarded with it, the concluding ceremony, if a buck, is a double; if a stag, a treble mort, blown by one, and a reheat in concert by all that have horns: the whole is then concluded with a general *whoop, whoop*.

HUNTING, *Otter*. See OTTER.

The otter is to be hunted by particular dogs, called *otter bounds*, and also with special instruments, called *otter spears*. To find him out, some are to go on one side of the river, and some on the other, beating all the way on the banks, with the dogs following. Thus it is soon found if there be an otter in that quarter; for the otter cannot endure long in the water, but must come forth to make his spraints, (excrements,) and in the night sometimes to feed on grass and other herbs. If the hounds find an otter, look in the soft and moist places, to learn by the prints which way he bent his head: if these make no discovery, it may be partly perceived by the spraints. This done, follow the hounds, and lodge him as a hart or deer.

The otter always endeavours to keep to the water, where he is master. In hunting him, therefore, you are to be ready with your spears, to watch its vents; for that is the chief advantage: if you perceive where he swims under water, strive to set a stand before him, where you expect he will vent, and there endeavour to strike him with the spear; if you miss, pursue him with the hounds; which, if they be good, and well entered, will come chaunting and trailing along the river-side and beat every tree, root, every osier-bed, and tuft of bulrushes; nay, sometimes they will take the water, and beat it like a spaniel; by which means the otter can hardly escape.

If the beast find himself wounded with a spear, he usually makes to land, where he will maintain a furious battle with the dogs.

HUNTING, *Roe-buck*. See ROE-BUCK, ROE DEER, and CERVUS *Capreolus*.

We have no roe-deer in England; but they abound in the Highlands of Scotland, Germany, Africa, &c. And it should seem that they have been more common among us, our huntsmen still retaining the proper terms for the chase.

They make good chase, stand long, and fly end-way. When a roe crosses and doubles, it is called *trapyning*. Their swiftness appears not only on the earth, but in waters, through which they cut their way as with oars; whence they love lakes and streams, breaking the floods to come at fresh pasture, feeding on rushes, &c.

Horns grow only on the male; being set with six or seven branches not palmed, but branchy, yet shorter than fallow-deer. After rutting he calls his head.

They are said never to wink, not even when asleep; for which conceit their blood is by some fanciful people prescribed to persons dim-sighted or purblind. The tail of this beast is less and shorter than that of a fallow-deer, inasmuch that it is questioned whether it ought to have that denomination.

They keep mostly in mountains among the rocks: and when hunted; Martial tells us, will hang on them with their horns, to delude the dogs. They are often taken by counterfeiting their voice, which the huntsman does by the assistance of a leaf in his mouth.

When hunted, they turn much and often, and will come back on the dogs directly. When they can no longer endure, they also take soil, as the hart; and will sometimes hang by a bough in such a manner, as that nothing shall appear above the water but their snout.

HUNTING-match. The first thing that is to be considered by

By one who designs to match his horse for his own advantage, and his horse's credit, is not to flatter himself with the opinion of his horse, by fancying that he is a swift, when he is but a slow galloper; and that he is a whole running horse (that is, that he will run four miles without a fob at the height of his speed) when he is not able to run two or three. Very probably some gentlemen are led into this error, by their being mistaken in the speed of their hounds, who, for want of trying them against other dogs that have been really fleet, have supposed their own to be so, when, in reality, they are but of a middling speed; and because their horse, when trained, was able to follow them all day, and upon any hour, to command them upon deep as well as light earths, have therefore made a false conclusion, that their horse is as swift as the best; but upon trial against a horse that has been rightly trained after hounds that were truly fleet, have bought their experience perhaps full dear; therefore it is advisable for all lovers of hunting to procure two or three couple of tried hounds, and once or twice a week to follow after them a train-scent, and when he is able to top them on all sorts of earth, and to endure heats and colds stoutly, then he may better rely on his speed and toughness.

That horse which is able to perform a hare-chase of five or six miles briskly and courageously, till his body be as it were bathed in sweat: and then after the hare has been killed, in a nipping frosty morning, can endure to stand till the sweat be frozen on his back, so that he can bear being pierced with the cold as well as the heat, and then even in that extremity of cold to ride another chase as briskly and with as much courage as he did the former, that horse which can thus endure heats and colds is most valued by sportsmen. Therefore, in order to make a judgment of the goodness of a horse, observe him after the death of the first hare, if the chase has been in any degree brisk; if when he is cold he shrinks up his body, and draws his legs up together, it is an infallible sign of want of vigour and courage; the like may be done by the slackening of his girths after the first chase, and from the dulness of his teeth, and the dulness of his countenance, all which are true tokens of faintness, and being tired; and such a horse is not to be relied on, in case of a wager.

Here it will not be improper to take notice of the way of making matches in former times, and the modern way of deciding wagers. The old way of trial was, by running so many train-scents after hounds, as were agreed upon between the parties concerned, and a bell-course, this being found not so uncertain, but more durable than hare-hunting; and the advantage consisted in having the trains laid on earth most suitable to the qualifications of the horses. But now others choose to hunt the hare till such an hour, and then to run this *wild-geese* CHASE (which see), a method of racing that takes its name from the manner of the flight of wild-geese, which is generally one after another: so the two horses, after running of twelve score yards, had liberty, which horse soever could get the leading, to ride what ground he pleased, the hindmost horse being bound to follow him, within a certain distance agreed on by articles, or else to be whipped up by the triers or judges which rode by; and whichever horse could distance the other, won the match.

But this chase was found by experience so inhuman, and so destructive to good horses, especially when two good horses were matched; for neither being able to distance the other, till both were ready to sink under their riders through weakness, that oftentimes the match was fain to be drawn and left undecided, though both the horses were quite spoiled.

This brought up the custom of train-scents, which afterwards was changed to three heats, and a straight course; and

that the lovers of horses might be encouraged to keep good ones, plates have been erected in many places of England. The fewer of these before you come to the course, if your horse be fiery and mettled, the better, and the shorter the distance the better. Also, above all things, be sure to make your bargain to have the leading of the first train, and then make choice of such grounds where your horse may best show his speed, and the fleetest dogs you can procure: give your hounds as much law before you as your triers will allow, and then, making a loose, try to win the match with a wind; but if you fail in this attempt, then bear your horse, and save him for the course; but if your horse be slow, but well winded, and a true spurred nag, then the more train-scents you run before you come to the straight course, the better. But here you ought to observe to gain the leading of the first train; which in this case you must lead upon such deep earths, that it may not end near any light ground; for this is the rule received among horsemen, that the next train is to begin where the last ends, and the last train is to be ended at the starting place of the course; therefore remember to end your last on deep earths, as well as the first.

HUNTING Cap, in the language of the *Sportsman*, is a cap made of leather, and covered with black velvet, fitting close to the head behind, and having a semi-circular peak before, for the protection of the face in case of falls, as well as in passing through strong coverts during the chase. In the sporting world it is termed a "dasher."

HUNTING Whip, is of different lengths in the handle or stock, and has at one end a long thong and lash, to assist occasionally in managing the hounds, and at the other a hook, hammer, or claw, for the purpose of holding or opening gates.

HUNTING Saddle. See SADDLE.

HUNTING Creek, in *Geography*, a river of America, in Virginia, which runs E. into Potowmack river, at the S. corner of the territory of Columbia.

HUNTING Islands, a cluster of small islands in the Atlantic ocean, near Port Royal, in the state of South Carolina. N. lat. 32° 24'. W. long. 80° 35'.

HUNTING Sound, a narrow channel on the coast of North Carolina, between Core bank and the continent.

HUNTINGDON, the principal town in Huntingdonshire, England, is situated on the northern side of the river Ouse, and is nearly connected, by three bridges and a causeway, with the village of Godmanchester, whence, according to Camden, it sprung. This place is called *Huntandene* in the Saxon chronicle, and *Huntantun* in other ancient writings. Henry of Huntingdon, the archdeacon and historian, describes it as "surpassing all the neighbouring towns in pleasantness of situation, beauty of buildings, nearness to the fens, and plenty of game and fish." Most writers agree with Camden respecting the origin of this town; and like him, have placed the *Diroliponte* of Antoninus at Godmanchester; yet the nature of the ground affords almost decisive evidence that the Roman station could not have been at that village, but was rather at *Huntingdon*, where the entrenchments, yet remaining, shew the works to have been very strong and extensive; and even Camden's own testimony may be urged in support of the opinion, that these fortifications had a far more remote origin than is commonly assigned. "On the river near the bridge," he observes, "which is fair built of stone, are to be seen the mount and site of a castle, which, in the year 917, king Edward the Elder built anew; and David the Scot, (to whom, according to an ancient historian, king Stephen gave the borough of *Huntingdon*, for an augmentation of his estate,) enlarged

HUNTINGDON.

enlarged with many works." Now, the re-building of the castle by Edward evinces, in a great measure, its previous antiquity; and its site, as in Camden's time, still remains to prove, that no spot of ground in this neighbourhood could be better adapted for a station or fortress. On the south it is bounded by the river, from which it rises very abruptly to a considerable height; the outer ramparts inclose an area of several acres, of a square form, with the angles rounded off, and the whole was environed by a deep ditch; the banks on the south, and south east, are still very bold. Not any vestiges of buildings now remain, but the foundations may, in various places, be traced from the unevenness of the surface; the artificial mount, on which most probably stood the keep of the castle, was also surrounded by a ditch. Below the high ground, to the south-westward of the entrenchments, is an extensive and fertile meadow, called Portholm, which Camden describes as "the most fresh and beautiful that the sun ever shone upon." This meadow is partly surrounded by the Ouse river; and here the Huntingdon races are held; a small part of it, which belonged to the protector Cromwell, and is now the property of the earl of Sandwich, still bears the appellation of Cromwell's-Acres.

Huntingdon is a borough by prescription, and the only one in the whole county. In the time of Edward the Confessor, as appears from the Domesday book, there were in "this burgh, four ferlings, in two of which were 116 burghesses, paying custom and geld, and under them 100 bordarii, who help to pay the geld; in the other two ferlings were 140 burghesses, subject to all customs, and the king's geld."

Scarcely any historical events are recorded as happening in this town. During the civil war, in the time of Charles I., it was pillaged by the king's troops, who were commanded by the king in person.

The religious houses, of which there were formerly four of different descriptions, are almost as entirely obliterated as the buildings of the castle. The most ancient was a priory of Austin canons founded on the spot where St. Mary's church now stands, before the year 973, as appears from a charter of that date, granted by king Edgar to Thorney abbey. The buildings have long been demolished; but the lanes which separated the closes still retain their ancient appellation. The next foundation in order of time, was an hospital for a master and brethren, and several leprous and infirm people, to which Malcolm IV. king of Scotland, and earl of Huntingdon, was a great benefactor. Another hospital, for leprous and poor people, was founded by David, earl of Huntingdon, in the time of Henry II. A house of Augustine friars was also established at the north end of the town, previous to the nineteenth year of Edward I. Huntingdon is generally stated to have been once much larger than at present; and sir Robert Cotton, as quoted by Speed, ascribes its decay to some alterations made in the river by one Grey, a minion of the time, by which its navigation was impeded. Leland says, that some ages before it had fifteen churches, though, in his time, reduced to four; the rest fallen through time and neglect, but traces of their walls and yards remaining. There are now only two churches, those of St. Mary and All Saints; but the town still consists of four parishes; that of St. John being connected with All Saints, and that of St. Benet with St. Mary's. The church of St. Mary, which is the corporation church, was rebuilt in the reign of James I., between the years 1628 and 1620, as appears from those dates over the north door-way: on the tower is the date 1613. It consists of a nave, chancel, and aisles, with a handsome embat-

tled tower at the west end, having strong buttresses with ornamental niches at the angles. The chancel contains several monuments to the Sayer family, one of whom, George Sayer, gent. contributed largely towards the internal repairs of this edifice, and besides several other donations, gave 500*l.* to purchase lands, the rents to be appropriated to the ministers of the two churches. Nearly opposite to St. Mary's church is a respectable mansion, now the property and seat of sir John Arundel, bart. All Saints church, which stands on the north side of the market place, appears, from the character of its architecture and ornaments, to have been built in the time of Henry VII. It is an embattled edifice with a small tower at the north-west angle; below the battlements is a bold cornice, charged with a multiplicity of sculptures, representing human and animal heads, flowers, &c., and among them the Tudor rose and the portcullis.

The principal charitable establishments in this town are, a free grammar school, well endowed; and a green coat school, wherein twenty four boys are clothed and educated. This is called Walden's charity, from Lyonel Walden, esq. who, by will dated July 1719, left a sufficient endowment for the purpose of supporting it. Among various other donations for charitable uses in Huntingdon, was the sum of 200*l.* bequeathed by Richard Fishbourn, a citizen of London, who died in 1625; this money was to purchase lands, the rents of which were to be appropriated to the use of the poor: he made similar bequests to other places, the amount of the whole being 11,000*l.* The market place is a spacious area, on the south side of which stands the town-hall, a modern brick building, stuccoed, with a sort of piazza in front and at the sides for the market people; and behind it the butchers' shambles. The assizes for the town and county are held here twice a-year; the lower part of the building being divided for the purpose into two courts; one for criminal, and one for civil causes. Above is a spacious assembly room, ornamented with full length portraits of their majesties, George II. and III. with their respective queens; and also a well painted picture of John, earl of Sandwich, who died in 1792. The market, which is held on Saturdays, is well supplied with provisions in general; and great quantities of corn are sold. Huntingdon had its first charter about the year 1206; king John granted it a peculiar coroner; a recorder, town-clerk, and two bailiffs, with the receipt of tolls and customs. Charles II., by a new charter, vested the government in a mayor, twelve aldermen, and an indefinite number of burghesses or common council, chosen from the principal inhabitants. This borough sent members to parliament *ab origine*, from the twenty-third of Edward I.; the right of returning the two members is generally understood to be possessed by the freemen and inhabitant householders, paying scot and lot; the number of voters is about 200; both the representatives are however nominated by the earl of Sandwich. The town principally consists of one street, extending, in a north-westerly direction, from the banks of the Ouse, to nearly the distance of a mile, and having several lanes branching off at right angles. The streets are paved, and lighted in the winter by a small assessment levied on the householders. The ancient town appears to have spread further eastward; yet whatever might formerly have been the extent of Huntingdon, the population seems to be nearly the same as it was a century past; as bishop Gibson states the number of families it contained in 1717 to be 400, whilst the return made to parliament in 1801, records their amount to be 350, consisting of 2035 persons, inhabiting 356 houses.

Among

Among the more eminent natives of this town, was Henry, surnamed *de Huntingdon*, from the place of his birth, a distinguished ecclesiastic and historian; who lived in the reigns of Henry III. and Edward I.; and wrote a history of the Saxon heptarchy, with accounts of the succeeding kings to the reign of Stephen. Richard Fishbourn, gent. who has been already mentioned for his charities, was also a native. Huntingdon was likewise the birth-place of one of the most extraordinary characters that ever lived, the protector Oliver Cromwell, who, though prevented by considerations of policy from assuming the regal title, enjoyed all the essentials of sovereignty, and ruled this country with more than regal power. (See CROMWELL.) Beauties of England and Wales, vol. vii.

HUNTINGDON, an extensive and mountainous county in Pennsylvania, bounded N. and N.W. by Lycoming county, E. and N.E. by Mifflin, S.E. by Franklin, S. and S.W. by Bedford and Somerset, and W. by Westmoreland. It is about 75 miles long, and 39 broad; comprehending 1,432,960 acres of land, divided into 18 townships, containing 3068 inhabitants. In this county are found limestone, iron ore, and lead. Works have been established for the manufacture of iron and lead.

HUNTINGDON, the capital of the above county, which is a post-town, situated on the N.E. side of Juniatta river, and at the mouth of Standing-stone creek, 50 miles from the mouth of Juniatta, and containing about 90 houses, a court-house, gaol, and 1251 inhabitants; 184 miles W.N.W. of Philadelphia. About six miles N.N.E. of the town is a mineral spring, celebrated for relieving rheumatism, and curing cutaneous disorders. N. lat. 40° 26'. W. long. 78° 2'.—Also, a post-town on the N. side of Long island, New York, at the head of a bay in Suffolk county, containing about 70 houses, a Presbyterian and an episcopal church; 38 miles E. by N. of New York city, containing 3892 inhabitants.—Also, a post-town in Fairfield county, Connecticut, containing 2792 inhabitants.

HUNTINGDON, *North and South*, two townships, in Westmoreland county, Pennsylvania, the former containing 1484, and the latter 2317 inhabitants.

HUNTINGDONSHIRE, one of the inland counties of England, is bounded on the south-east and north-east sides by Cambridgeshire, on the north and north-west by Northamptonshire, and on the south-west by Bedfordshire. Its limits are chiefly artificial: the river Nene, on the Northamptonshire border, with the King's Delf, the Old West Water, and the Ouse river, on the Cambridgeshire side, being the principal exceptions. The general form of this county is an irregular square: its extent, from north to south, is nearly thirty miles; its greatest breadth, from east to west, twenty-three; and its circumference about one hundred: its superficial contents have been estimated at from 220,000 to 240,000 acres. It contains four hundreds, six market towns, 107 parishes, 6976 houses, and 37,568 inhabitants, *viz.* 18,521 males, and 19,047 females, according to the late returns made under the population and poor acts. It sends four members to parliament; two for the shire, and two for the town of Huntingdon. The government of this county is very peculiar; Cambridgeshire being joined to it under one sheriff, who is chosen out of that county one year, out of the isle of Ely the second, and out of this county the third: and in the isle of Ely alternately out of the north and south parts. The whole of this county is in the diocese of Lincoln.

Ancient History.—Huntingdonshire, with the adjacent counties of Cambridge, Norfolk, and Suffolk, originally composed the territory of the Iceni; and in the Roman

division of the kingdom was included in the district named Flavia Cæsariensis. The principal Roman stations in Huntingdonshire, were Duroliponte at Huntingdon, and Durobrivæ, near Dornford Ferry, about midway between Cherterton in this county, and Caistor in Northamptonshire. The principal ancient roads, of which there appear to have been three, intersected each other near Huntingdon: one of them has been called the British Ermin. This seems to have entered the county from the vicinity of Cæsar's camp, or Salenæ, in Bedfordshire, and to have proceeded by Cranehill, in the track since known by the name of Hell-lane, whence passing through Tofeland, Godmanchester, and Huntingdon, it continued by Alconbury, Welton, and Upton; and entered Northamptonshire at Wandsford. The Roman Ermin-street came into this county from Cambridgeshire, near Papworth St. Agnes, and proceeded to Godmanchester; branching off to the eastward, it crossed Northamptonshire, and entered Rutlandshire, near Stamford. The Via Devana, the third and last of these roads, entered this county from Cambridgeshire in the neighbourhood of Fenny Stanton, and quitted it for Northamptonshire in the vicinity of Clapton. In the early Saxon times, this district formed a part of the kingdom of East Anglia, and was then called Huntedunescyre, and Huntandunescyre. It was afterwards subjugated by the Mercian sovereigns, and continued under their dominion till the union of the Saxon states into one monarchy, by Egbert. "In the decline of the Saxon government," Camden observes, "this county had an officary earl, Siward; for earldoms were not yet hereditary in England, but the governors of shires were, according to the custom of that period, called earls, with the additional title of the shires they presided over: as this Siward, while governor here, was called earl of Huntingdon, but afterwards having the government of Northumberland conferred upon him, he was called earl of Northumberland." The principal land owners in this county in the Norman times, as recorded in the Domesday book, were the king, the bishops of Lincoln and Constance; the abbots of Ely, Croyland, Ramsey, Thorney, and Peterborough; the countess Judith, sheriff Eustace, earl Eustace, earl of Ow, earl Hugh, Walter Giffard, William de Warren, Hugh de Bolebec, Endo Fitz-Hubert, Swain of Effex, Roger de Iveri, Arnulf de Hefding, Gilbert de Gaunt, Aubrey de Ver, Ralph Fitz-Osmund, and Rothais, wife of Richard Fitz-Gilbert.

Surface, Fens, Soil, &c.—Huntingdonshire, Leland says, "in old time, was much more woody than it is now, and the dere resorted to the fennes; it is full long fens it was deforested." Camden corroborates this, and states, "that the inhabitants say it was once covered with woods; and it appears to have been a forest, till Henry II., in the beginning of his reign, disforested the whole, as set forth by an old perambulation, except Waybridge, Sapple, and Herthei, which were the lord's woods and remain forest." Sir Robert Cotton says, "this country was not completely disforested till the time of Edward I., when that sovereign, in his twenty-ninth year, confirmed the great charter granted by Henry III., and left no more forest than his own demesne." This description of forest land cannot be supposed to apply to the fens, of which there are 44,000 acres in this county, exclusive of about 5000 acres of what are called skirty lands. These constitute nearly a seventh part of what is called the Great Bedford Level, but they belong to that division called the Middle Level, and are principally found on the north and north-eastern parts of the county. About 8000 or 10,000 acres of the fen-lands are productive, yet the expence of keeping them from inundation amounts to almost one-third of the rents, through the imperfect state of the drainage. "It may

may seem paradoxical," says Mr. Maxwell, "that the fens of Huntingdonshire, whose surface is comparatively high, should be worse drained than those that lie between them and the sea, the surface of which last is considerably lower; the natural supposition being, that water will inevitably fall from the higher to the lower level. But this is the case with all the fens that are upon the skirts of the high land, and proves only, that the general drainage was executed upon principles fundamentally wrong. The fact is, that there was not a proper outfall to the sea, at the time of the general undertaking to drain the fens, nearly a century and a half ago; and ingenious men employed themselves not in obtaining an outfall, as they ought to have done, but in constructing large drains, and high banks, within the boundaries of the fens, expecting the water would force its own passage, in spite of every impediment; though the distance between the fens and the sea was from ten to fifteen miles. This not proving to be the case, ingenuity was set to work, to invent engines for the purpose of throwing the water out of the lands into the internal rivers. Still it did not find its way to the sea, but overtopped the banks, or broke them down with the weight of its pressure; even to this moment, instead of resorting to the outfall, the engines have been increased in size, and the banks raised still higher, so that the water, which, if there had been an outfall, would have found its way to the sea, and left to itself, would have rested on the lowest of the land, has been forced in a retrograde motion, over the surface of the higher lands; and hence the deplorable state of the fens in Huntingdonshire." The skirted lands are those which border on the fens, and partake of the properties of moor, combined with whatever soil, whether clay, gravel, or loam, that may be prevalent in the adjacent uplands. These lands, in general, afford luxuriant grazing. The meadow lands, which are the next in order on the scale of elevation, consist of about twelve or fourteen hundred acres, bordering on the rivers Nene and Ouse, but chiefly on the latter. These are extremely productive, but the produce is frequently damaged by the floods, and the crops sometimes totally carried away; this chiefly happens along the banks of the Ouse from St. Neots to Erith; and the numerous water-mills which are placed upon this stream increase the risk of damage. The soils in the upland parts of the county are various, but principally consist of a strong deep clay, more or less intermingled with loam, or of a deep gravelly soil, with loam. Of what are called the deep-stapled lands, great part is still in an open field state, where each particular occupier is necessarily obliged to pursue whatever course of tillage is practised by the parish at large. The woodlands are but of inconsiderable extent; and the country is thin of timber: this is attributed to the very great demand for it in the fens; and the underwood is sold at a higher price by the pole, than in moist other countries. The high roads are in general pretty good; the cross roads are but indifferent; and in the winter season many of them become impassable. No manufactures of note are carried on in this county, nor hardly any thing that bears reference to them, except wool-stapling and spinning yarn: the latter is the chief business of the women and children in the winter season; in summer they seek a more profitable employ in the fields.

Rivers.—The principal rivers connected with Huntingdonshire, are the Ouse, and the Nene or Nen. The Ouse enters the county from Bedfordshire, and in its course towards Huntingdon is increased by a combination of small streams: having passed that town, it becomes the boundary between this county and Cambridgeshire, till it enters the Great Level of Fens near Erith: this river is navigable along its whole line across the county. The Nene rises in North-

amptonshire, and flowing through a delightful vale, reaches Huntingdonshire near Elton, where it becomes the boundary between both counties: afterwards winding to the east, it pursues a devious course to Peterborough, below which it sinks into the Fens, and passes onward to the sea. Some smaller streams water the north-east side of this county, together with several large meres, or pools of water; namely, Whittlesea Mere, Ramfey Mere, Ugg Mere, &c.: of these, Whittlesea Mere is by far the largest, and covers an area of several miles in extent: it affords excellent sailing and fishing, and is in the summer season much frequented by parties of pleasure. Most of the meres are visited by abundance of wild-fowl. Maxwell's General View of the Agriculture of Huntingdonshire. Beauties of England, vol. vii.

HUNTINGTON, ROBERT, in *Biography*, an English divine, was born at Deerhurst, in Gloucestershire, in 1636, and educated at Bristol, from whence he was removed to Merton college, Oxford, of which he became fellow. In 1662-3, he was admitted to the degree of M. A.; after this he applied himself most diligently to the study of divinity and the Oriental languages. In 1670 he was appointed chaplain to the factory of Aleppo, where he improved himself in the Oriental languages, and collected many curious manuscripts. Having carefully visited almost the whole of Galilee and Samaria, and examined the opinions, customs, and religious books, he went to Jerusalem, from thence he embarked for Cyprus, for the purpose of examining the library of Hilarion Cigala, the primate of the island, but on his arrival at Cyprus he found the prelate had been obliged to seek his safety from the Turks in flight. In the following year he undertook the difficult journey of 150 miles to view the ruins of Palmyra, which he was prevented from examining, and was himself in considerable danger of his life from two Arab chiefs, who had taken possession of that district. He next went to Egypt, and continued during his whole residence in the East to improve himself, and benefit his country and the world, by rescuing from oblivion curious copies of the Gospels, and other books relating to polite literature. In the year 1682 he set out on his return home, and visited in his journey Rome, Naples, and other most considerable places in Italy. From Italy he went to Paris, thence he arrived safe in England, and was, almost immediately after his return, raised to the degree of D. D., and at the same time appointed master of Trinity college, Dublin. This promotion he very much disliked, regarding it as a kind of banishment: but he was persuaded by his friends to undertake the duties attaching to the office, which he performed very much to the benefit of the institution, and to the interests of literature in general. In 1691 he returned to England, resigned his mastership, and resolved never more to quit his country. He made a present to the Bodleian library of many valuable MSS., the curators of which purchased his others, to the number of about 600, for the sum of 700*l.* In the following year he was presented to the rectory of Great Hallingbury, in Essex. About the same time he was offered the bishopric of Kilmore and Ardagh, in Ireland, which he refused: but in 1701, notwithstanding his former determinations, he accepted the bishopric of Raphoe, in that kingdom. He survived his consecration but a few days, and died in the forty-sixth year of his age. Some of his observations are in Ray's Collection of Voyages and Travels; and in the Philosophical Transactions he gave an "Account of the Porphyry Pillars of Egypt." *Biog. Brit.*

HUNTINGTON, in *Geography*, a post-town in Chittenden county, Vermont, on the S. side of Onion river, 15 miles S. E. of Burlington, containing 405 inhabitants.

HUNTLY, is a considerable town and parish in Aberdeenshire, Scotland, situated on the point of land formed by the confluence of the rivers Bogie and Deveron. The former consists of two large streets, which cross each other at right angles, and form a spacious square, in which the markets are held. The town has greatly increased in population and active trade within the last sixty years: in the year 1792, there were fifty-two flax-dressers, whose manufactures, at an average, amounted to 16,224*l.* annually, and 209 weavers, whose labours produced yearly 73,150 yards of cloth. The return to parliament, in 1801, stated the number of houses to be 498; of inhabitants 2863. Three fairs are held annually. Near the town, on the banks of the Deveron, is the elegant residence of the marquis of Huntly, eldest son of the duke of Gordon: and adjoining to Deveron bridge stand the ruins of Huntly castle, the magnificent mansion of that ancient family, built in 1602 by George, first marquis of Huntly. The parish of Huntly is about six miles in length and four in breadth; and was formed, in 1727, by uniting the two ancient parishes of Dumbenan and Kinore. Sinclair's Statistical Account of Scotland, vol. xi.

HUNTORP, a town of Germany, in the county of Oldenburg; 9 miles N. E. of Oldenburg.

HUNT'S BAY, a bay on the S. coast of Jamaica. N. lat. 17° 52'. W. long. 79° 49'.

HUNT'S TOWN, the seat of justice in Jefferson county, Mississippi territory, situated on an elevated plain, near the middle fork of Cole's creek, about 25 miles N. from the town of Natchez, about 10 miles from the confluence of Cole's creek with the Mississippi river. This town is in the midst of a healthy and fertile country, settled by industrious and wealthy inhabitants. An elegant court-house, gaol, several store and dwelling houses have been built in this place.

HUNTSBURG, a post-town of America, in Franklin county, Vermont, situated on the Canada line, and containing 280 inhabitants.

HUNTSMAN, a person whose business it is to superintend every department of a hunting establishment, as well as to conduct a pack of hounds with skill and success in the field. According to the description given of such a person by Mr. Beckford, he should be strong, active, sensible, good-tempered, fond of the diversion of hunting, and indefatigable in the pursuit of it. He should also be sober, exact, civil, and cleanly; he should be a good groom, and an excellent horseman; his voice should be clear and strong; and he should have an eye so quick as to perceive which hound carries the scent, when all are running, and an ear so excellent, as always to distinguish the foremost hounds, when he does not see them; he should be patient, quiet, and without conceit. These excellencies, which constitute a good huntsman, he should not be too fond of displaying, until occasion calls them forth. Hounds should be let alone while they can hunt; and the huntsman should display his talents in assisting them, when they cannot. Subordinate to the huntsman is the "Whipper-in," who should possess nearly the same qualities with the huntsman, to whom he should be attentive and obedient. His station in the field is on the side of the cover opposite to the huntsman, whose halloo he should be near enough to hear, and ready to obey. More foxes, it is said, will be killed with an excellent whipper-in and a moderate huntsman, than with the best of huntsmen without such an assistant, because hounds oftener need the one than the other.

HUNTSVILLE, in *Geography*, a post-town of America, in North Carolina; 16 miles from Rockford.

HUNYAD, a town of Transylvania, on a small river, which runs into the Maros; 54 miles E. N. E. of Temesvar. N. lat. 45° 51'. E. long. 22° 44'.

HUPPOOAH, a town of Bengal; 47 miles N. W. of Ramgur.

HURA, in *Botany*, a name of barbarous origin, but, contrary to his usual practice, adopted by Linnæus. It appears to be the name of the tree in question among the inhabitants of Guiana, not, as professor Martyn reports, of Mexico, where it is said, in Hernandez, to be distinguished by the sesquipedalian appellation of *Quaublatlatzin*, which, it seems, means a *cracking tree*. Linn. Gen. 504. Schreb. 660. Willd. Sp. Pl. v. 4. 592. Mart. Mill. Dict. v. 2. Juss. 391. Lamarek. Illustr. t. 793. Class and order, *Monocia Monadelphica*. Nat. Ord. *Euphorbia*, Juss.

Gen. Ch. Male, *Cal.* Catkin oblong, drooping, obtuse, covered with sessile florets; scales oblong, with a pair of very short internal abrupt ones besides. *Cor.* none. *Stam.* Filament cylindrical, rather longer than the scales, rigid, peltate, with two or three whorls of tubercles near the top; anthers two sunk in each tubercle, oval, cloven.

Female, *Cal.* Perianth of one leaf, inferior, cylindrical, furrowed, abrupt, entire, closely entolding the germen. *Cor.* none. *Pist.* Germen roundish, within the calyx; style long, cylindrical; stigma large, peltate, convex, coloured, in twelve equal reflexed lobes. *Peric.* Capsule woody, orbicular, depressed with twelve furrows and twelve cells, each with two elastic, semi-lunar, pointed valves. *Seeds* solitary, orbicular, compressed, large.

Ess. Ch. Male, Catkin imbricated, with three scales to each floret. Corolla none. Stamen peltate at the top.

Female, Calyx cylindrical, entire. Corolla none. Stigma peltate, in twelve segments. Capsule of twelve cells, with two elastic valves to each. *Seeds* solitary.

1. *H. crepitans*. Sand-box tree. Linn. Sp. Pl. 1431. Hort. Cliff. 486. t. 34. Trew. Ehret t. 34, 35. f. 1.—Native of South America.—A tree of considerable height. The leaves are large, alternate, stalked, heart-shaped, serrated, rugged, rough. *Flowers* small and inconspicuous, except for their purple stigma, from the forks of the branches. *Fruit* large, often brought to Europe, and used as a sand-box, but if suffered to hang too long before gathering, it will, in a dry warm room, explode with great violence and noise, like the sound of a pistol. The seeds are emetic and purgative.

HURCHUNCHUCK, in *Geography*, a town of Bengal; 25 miles E. S. E. of Boglipour.

HURCHUNDY, a town of Bengal; 10 miles S. of Chinary.

HURCHURNPOUR, a town of Bengal; 17 miles N. of Rajemal.

HURCOS, or **URCOS**, a town of Peru, in the diocese of Cusco; 21 miles S. of Cusco.

HURDAH, a town of Hindoostan, in the Candehish country, on the S. of the Nerbuddah river; 22 miles S. S. E. of Hindia. N. lat. 22° 23'. E. long. 77° 19' 45'.

HURDES, or **HARDS**, of flax or hemp, the coarser parts, separated in the dressings from the tear or fine stuff. See **HEMP** and **FLAX**.

HURDLE is the name of the sledge used to draw traitors to the place of execution.

HURDLE, in *Agriculture*, the name of a light wooden frame, formed of small bars, or otherwise, somewhat in appearance similar to the low common field gate. It is principally employed for the purpose of constituting a fort of moveable fence for inclosing and confining sheep, and other kinds of live stock, during the time they are consuming some
fort

fort of rich green, or other luxuriant food. The usual materials for the forming of hurdles are those of some sort of light split wood, or hazel rods of rather young growth. In the former case they are commonly put together by means of framing or nailing, and in the latter by wattling the rods in between a fort of small flakes. Hence they are often denominated *framed* or *wattled* hurdles by way of distinction.

Besides the above uses, hurdles are necessary in folding sheep on arable lands, and also in feeding off turnips, either by them or neat cattle, on the land, in order to keep them upon a certain space of ground, and thus afford them a limited portion of food at a time, by which a considerable saving is effected in its being eaten up more cleanly and with less waste, than would be the case if they ranged over the whole. And on the tillage lands the sheep, by being so closely confined, contribute in a very high degree to its fertility and improvement.

It has been lately observed, that "in the grazing of a large field, for instance, when the sheep or cattle are turned upon it early in the spring, they tread down and destroy a great deal of the grass; and by dropping their dung and urine upon the remainder, injure it so much as to render it unpalatable to the stock. In this way a great proportion of the grass is lost in every field of considerable extent: whereas when the stock is first put upon the field, if hurdles or flakes were run across a small part of it, as is the case with turnips, and the grazing stock kept there till they had eaten the herbage clean up, they would then, from necessity, eat a great deal that is entirely lost, when they are permitted to range over the whole field. In this way considerably more stock might be fed upon a given space, than is done at present. It is to be observed, however, that the first space divided off by the flakes should be next the water, especially if the field is grazed by black cattle or horses, and that progressively, as the stock is removed from the watering place, a lane should be left, by which the cattle may travel to the pond. It is also to be noticed, that after the first space allowed to the grazing stock is eaten clean up, and as soon as they are shifted to a new place, a course of flakes should be placed behind them, to prevent them from going backward upon the pasture that has been already eaten bare. By this management the whole of the herbage, upon every space allotted to the stock, will not only be completely eaten up, but, by dividing or fencing off that part which has been eaten, the plants are allowed to recover; and, long before the whole field is gone over, the space first eaten will be in a situation to receive the stock a second time. By this method the dung and urine of the stock, instead of rendering the herbage nauseous and unpalatable, and thereby preventing them from eating it, will, by its fertilising powers, assist its growth, and render it sooner fit for being eaten a second time, and by that means afford three or four crops in the space of a year instead of one. Experience has sufficiently evinced the great profit and advantage that attend the practice of tending cattle or horses upon good pasture, or of feeding them in the house with cut grass. The benefit in both these cases arises from the whole of the herbage being completely eaten up, without any part of it being lost. The same benefit, but with infinitely less trouble, may be reaped from *burdling* or *flaking* grass fields: every possible advantage will be made of them in this way; and in very many instances it will happen, that before a half or two-thirds of the field are gone over by flaking, the part first eaten will be in a situation again to receive the stock. By that means a part of the field may be saved for hay; or, if the views of the occupier be of another kind, the num-

ber of the grazing stock may be increased in a proper degree."

The writer is "aware, however, that it may, and no doubt will be argued by many, that this management will be attended with much trouble and expence; and after all, that the profit resulting therefrom will be but small, and scarcely prove equivalent to the trouble and extra expence. From the acknowledged value of hurdling, however, in the consumption of turnips, cabbages, &c., and the great profit which arises from giving the stock only a certain quantity of food at once, and withholding any more from them till that is eaten up, some idea may be formed of the vast advantage that would attend the flaking of a grass-plot in different cases. He by no means, however, wishes these observations to be understood as applying to grass pastures of every description; quite the contrary, as there are many situations where the expence and trouble of flaking would prove more than an equivalent for any advantage that could be reaped from the practice. But upon all rich pastures, the benefit arising from the practice of flaking will be found very considerable, and a single experiment will be sufficient to convince the most incredulous."

It is obvious that in parks, pleasure-grounds, and other ornamented places, the eating of the grass may be the most conveniently and economically accomplished by means of hurdles, as, in this way, the danger of injuring the trees and shrubs is most effectually prevented; and from the hurdles being capable of a ready removal, any portion can at pleasure be eaten down in the most desirable manner.

In regard to the expence of hurdles, those of the framed kind are usually from about 12s. to 18s. or 20s. the dozen, according to the manner of making them, and the nature of the wood employed. The wattled sort are commonly much cheaper, being seldom higher than from 10s. to 12s. the dozen. A representation of a framed hurdle is given in the plates on fences. See FENCE.

It is found from actual trials, that a dozen and a half are sufficient for folding thirty sheep; and that about twelve dozen will answer the purpose for one thousand in most cases.

HURDLE, *lamb*, the title of another sort of hurdle, constructed for the purpose of protecting and preserving lambs soon after they have been dropped, and while they continue in a weakly state. It is suggested in the survey of Lincolnshire, that "vigilance in the lambing season prevents much of the danger in bad weather, but that in addition," a provision against the loss of lambs in the ditches of the breeding pastures, has there been made at a small expence, by means of lamb-hurdles.

These are constructed of two thin rails, with heads at the ends and proper braces; the space between the rails being closed in by having tarpauling nailed securely to each of the rails, &c. But it is hinted, that "as the tarpauling would require many nails, and as canvas is a dear article," the space may perhaps "be better filled, by a slit deal held in its place by having braces on both sides, one of which might be moveable, and fix with nuts on the rivets, by which means the board might be put in only occasionally when wanted." This description of hurdle is represented in the plates on fences. See FENCE.

It is further noticed, that this hurdle, "when the lower rail touches the ground, is a perfect defence against the wind, and of a sufficient height to prevent the lambs driving before a storm into the ditches; so that it answers two good purposes." And that, "at other seasons also, these hurdles may come into use for guarding the brows of banks against sheep.

HURDLES, in *Fortification*, twigs of willows or osiers, interwoven close together, in the form of a long square, five or six feet long, and three or three and a half broad, sustained by strong stakes, and usually laden with earth. Hurdles, called also *clayes*, serve to render batteries firm, to consolidate the passage over muddy ditches, and cover traverses and lodgments, for the defence of the workmen against the artificial fires or stones that may be cast upon them.

HURDLING, a term signifying the art or practice of dividing land by the use of hurdles, in the view of improving the grounds or consuming the food with greater economy and advantage, by the confining of different sorts of live stock, within certain limits. It is a highly beneficial method of management in a great number of instances. See *FOLDING of Sheep*, and **HURDLE**.

HURDS, in *Rural Economy*, a name given to the coarser parts of flax and hemp, which in the dressing of them are separated from those of the fine stuff of either of such matters.

HURDWAR, in *Geography*, a town of Hindoostan, in the northern part of the country of Delhi, on the Himalah, near the W. coast of the Ganges, where it enters the plains of Hindoostan, on the borders of Thibet; 86 miles N. of Delhi. N. lat. $29^{\circ} 55'$. E. long. $78^{\circ} 23'$. See **GANGES**.

HURDY-GURDY. See **MONOCHORD**.

HURE, CHARLES, in *Biography*, an eminent French divine, was son of a labourer at Champigny-sur-Yonne, where he was born in the year 1639. As he shewed a strong inclination for learning, his father caused him to have a good education, and obtained for him assistance from the archbishop of Sens, who gave him an exhibition in the college des Grassins at Paris, where he distinguished himself greatly among his contemporaries. Having completed his academical studies he was admitted into holy orders, and appointed one of the preachers of his college. He was afterwards made professor of the belles lettres; and at length became principal of the college of Boncourt, where he died in 1717, in the seventy-eighth year of his age. His principal works are, "A Dictionary of the Bible," in two volumes folio. "A Translation of the New Testament into the French Language with Notes," and "A Sacred Grammar," intended to illustrate the New Testament. He was a man of great simplicity of manners, who united to much candour, ardent piety and a solid judgment. Moreri.

HUREEPOUR, in *Geography*, a town of Hindoostan, in Lahore; 95 miles E.N.E. of Lahore. N. lat. $32^{\circ} 5'$. E. long. $75^{\circ} 42'$.

HURENHUTTERS, in *Ecclesiastical History*. See **HERRNHUTERS**.

HURFWA, in *Geography*, a town of Sweden, in the province of Skone; 10 miles N.E. of Lund.

HURIEL, a town of France, in the department of the Allier, and chief place of a canton, in the district of Montluçon; six miles N.W. of it. The place contains 1628, and the canton 10,178 inhabitants, on a territory of 400 kilometres, in 16 communes.

HURKUTTA, a town of Bengal; 40 miles S.S.E. of Curruckdeah.

HURLE BONE, in a horse, is a bone near the middle of the buttock; very apt to go out of its sockets with a slip or strain.

HURLERS, a number of large stones, set in a kind of square figure near St. Clare, in Cornwall, so called from an odd opinion held by the common people, that they are fo

many men petrified, or changed into stones, for profaning the sabbath-day by hurling the ball, an exercise for which the people of that county have been always famous.

The hurlers are oblong, rude, and unhewed. Many authors suppose them to have been trophies erected in memory of some battle; others take them for boundaries to distinguish lands. Lastly, others, with more probability, hold them to have been sepulchral monuments.

HURLEY, in *Geography*, a township of America; in Ulster county, New York; containing 1159 inhabitants.

HURLOCK, in *Mining*, signifies the harder beds of chalk in the lower parts of the series N. of Dunstable, which is principally used for burning lime, for mortar-making in that district, for the use of lime in agriculture is there almost unknown. The hurlock is without layers of flints, and contains very minute grains of flint distributed through its mass; some large cornu ammonias and others of an oval figure, according to Mr. Parkinson, and other shells are found in it; the lower beds are mostly siliceous, and they terminate below in the Totternhoe freestone, of which Woburn abbey, the Swan Inn at Bedford, and many other good houses are built; this, at the foot of the North Downs, near Ryegate, Godstone, &c. is a fire-stone; at the foot of the South Downs in a similar situation it has not been discovered, because not sought after, we believe.

HURLY-BURLY, in *Vulgar Language*, denotes confusion, or tumult, and is said to owe its origin to two neighbouring families, Hurleigh and Burleigh, which filled their part of the kingdom with contest and violence. Johnson.

HURON, in *Geography*, one of the five principal lakes of North America; lying between $43^{\circ} 30'$, and $47^{\circ} 30'$ N. lat. and between $80^{\circ} 45'$, and $84^{\circ} 45'$ W. long., and reckoned upwards of 1000 miles in circumference. The fish of this lake are similar to those of lake Superior, with which it communicates by the straits of St. Mary, about 40 miles in length, and in some places only one or two miles in breadth, with a rapid towards the N.E. extremity, which may however be descended by canoes, and the prospects are here delightful. Another short strait leads into the lake called Michigan, and it communicates with lake Erie on the S. It is of a triangular shape; and on the S.W. part is Saginum or Sagana bay, 80 miles long and about 18 or 20 broad. The other most remarkable bay is Thunder bay. On the banks of the lake are found great quantities of sand cherries. The land on the western shore is much inferior in quality to that on lake Erie. It is mixed with sand and small stones, and is covered chiefly with pines, birch, and some oaks; but at a little distance from the lake the soil is very luxuriant. Some few years ago, a part of the Indian nations, called Chepaways and Ottaways, who inhabited round Sanguinum bay, and on the banks of the lake, could furnish 200 warriors; and those of the latter nation, who lived on the E. side of lake Michigan, 21 miles from Michilimackinack, could furnish 200 warriors. Those who lived on the E. side were called Hurons.—Also, a small river of the north-west territory, which, after a course of 38 miles, falls into lake St. Clair from the N.W.—Also, another small river in the same territory, which runs north-eastward into lake Erie; 40 miles westward of Cayaboga, and 15 S.E. of the mouth of Sandusky lake.

HUROUNG, a town of Bengal; 35 miles S.S.E. of Islamabad.

HURPEYA, a town of Hindoostan, in Moultan; six miles N.W. of Shawanaz.

HURPLE, in *Rural Economy*, a term applied in many places to cattle, when they set up their backs in the cold severe winter season.

HURPOIS, in *Geography*, a small island on the E. side of the gulf of Bothnia. N. lat. 63° 18'. E. long. 21° 34'.

HURRAI, a town of Hindoostan, in Oude, on the left bank of the Ganges; 12 miles S. of Corah.

HURRERS, in our *Old Writers*. The cappers and hat-makers of London, formerly one company of the haberdashers, were called by this name.

HURRIAPOUR, in *Geography*, a town of Hindoostan, in Bahar; 13 miles N. of Durbungah.

HURRICANE, a very violent wind, such as to blow down trees, unroof houses, and produce other destructive effects. Though hurricanes are observed occasionally in most parts of the earth, it is in the torrid zone, and particularly in the West Indies, where their devastations are more peculiarly observed. In Long's history of Jamaica, we find a chronological table of the most remarkable hurricanes which took place in the West Indian islands for more than a century. The times and places are as follow :

| | |
|-----------------------|--|
| Hurricanes. | |
| 1670 | at Barbadoes, |
| 1674 | Do. |
| 1675 | Do. |
| 1691 | Antigna, |
| 1700 | Barbadoes, |
| 1702 | Do. |
| 1707 | Caribbee islands in general, |
| 1712 | Jamaica, |
| 1720 | at Barbadoes, |
| 1722 | Jamaica, |
| 1733 | Caribbees in general, |
| 1744 | Jamaica, |
| 1764 | Martinico, Carthagena, and particularly at some of the Caribbee islands, |
| 1772 | Most of the Caribbee islands, |
| To which may be added | 1780 October 3d, Jamaica. |

The one that happened Aug. 31, 1722, was very terrible and destructive, it extended 700 leagues or upwards.

Few people of scientific observation have had opportunities of marking the phenomena which attend these West Indian hurricanes. A writer, giving an *Account of the European Settlements in America*, observes, "It is in the rainy season, principally in the month of August, more rarely in July and September, that they are assailed by hurricanes, the most terrible calamity to which they are subject from the climate. This destroys at one stroke the labour of many years, and frustrates the most exalted hopes of the planter, and often just at the moment when he thinks himself out of the reach of fortune. It is a sudden and violent storm of wind, rain, thunder, and lightning, attended with a furious swelling of the sea, and sometimes with an earthquake; in short, with every circumstance which the elements can assemble that is terrible and destructive. First they see as a prelude to the ensuing havoc, whole fields of sugar-canes whirled into the air, and scattered over the face of the country. The strongest trees of the forest are torn up by the roots and driven about like stubble. Their wind-mills are swept away in a moment. Their works, their fixtures, the ponderous copper-boilers and stills of several hundred weight, are wrenched from the ground and battered to pieces. Their houses are no protection, the roofs are torn off at one blast, whilst the rain, which in an hour rises five feet, rushes in upon them with an irresistible violence. There are signs which the Indians of these islands taught our planters, by which they can prognosticate the approach of a hurricane. It

comes on either in the quarters or at the full or change of the moon. If it will come on at the full moon, you being at the change, observe these signs. That day you will see the sky very turbulent. You will observe the sun more red than at other times. You will perceive a dead calm, and the hills clear of all those clouds and mists which usually hover about them. In the clefts of the earth, and in the wells, you will hear a hollow rumbling sound like the rustling of a great wind. At night the stars seem much larger than usual, and surrounded with a sort of burs. The north-west sky has a black and menacing look, and the sea emits a strong smell and rises into vast waves, often without any wind. The wind itself now forfakes its usual steady easterly stream, and shifts about to the west, from whence it sometimes blows with intermissions violently and irregularly for about two hours at a time. You have the same signs at the full of the moon. The moon itself is surrounded with a great bur, and sometimes the sun has the same appearance." Another author, Captain Langford, (see *Philos. Trans.* abridged, vol. ii. p. 105.) makes the following observations amongst others: "It is to be observed, that all hurricanes begin from the N. to the westward, and on those points that the easterly wind doth most violently blow, doth the hurricane blow most fiercely against it; for from the N.N.E. to the E.S.E. the easterly wind bloweth freshest, so doth the W.N.W. to the S.S.W. in the hurricane blow most violent, and when it comes back to the S.E. which is the common course of the trade-wind, then it ceaseth of its violence and so breaks up.

Though hurricanes may be deemed extraordinary events, and therefore may be ascribed to the operations of extraordinary causes, it is more probable that they arise principally from the ordinary causes of wind, which are the unequal temperature of the earth's surface in the different parallels of latitude, or rather of the incumbent atmosphere, and the diurnal rotation of the earth; to which may be occasionally added the precipitation of uncommon quantities of rain, accompanied with thunder and lightning. See WIND.

It has been the custom of late times to assign electricity as the cause of every inexplicable phenomenon in meteorology. Not only hurricanes but winds in general have been referred to electricity as their cause; but it will be time enough to introduce this cause when the common principles of the mechanical philosophy have been fairly applied and found inadequate to the explication.

Switzerland is subject to very violent hurricanes, which do great mischief, and that in a very singular manner. Thunder and lightning are frequent with them in winter as well as in summer; and the more violent storms of these are sometimes attended with whirlwinds and hurricanes, which will raise the waters of some lakes in form of a thick pillar up to the clouds, and carrying on before the wind this vast body of water, will sometimes fall on other places on dry land, and drown the houses and gardens where it chanced to fall.

HURRIERS, in *Mining*, are those persons employed in a coal-pit, who hurry or drag the corves of coals from the banks where they are dug to the bottom of the winding shaft to be drawn up.

HURRIES, in *Engineering*, is sometimes applied, at Newcastle and other places, to the strong stages of wood erected by the sides of the navigable rivers and harbours, on to which the rail-ways are conducted from the coal-pits; by which means the load is at once emptied, by help of a spout, from the rail-way waggons into the holds of the ships. See STAIRS.

HURRY, in *Agriculture*, a term often applied in the south-western and other districts of the kingdom, to a small load of corn or hay.

HURRYAL, in *Geography*, a town of Bengal; 20 miles S.E. of Nattore. N. lat. $24^{\circ} 18'$. E. long. $89^{\circ} 28'$.

HURRYPOUR, a town of Hindoostan, in Sanore; 17 miles S. of Ranny Bednore.

HURSALOO, a town of Hindoostan, in the circar of Nagore; 12 miles W. of Catchwana.

HURST, or **HYRST**, in our *Old Writers*, denotes a wood or grove of trees. Hence such places as have this word for part of their names, have been situated near a wood. In Kent, Suffex, and Hampshire, there are many such, because formerly the great wood called Anderwald extended itself through these counties.

HURTER, in *Artillery*, a flatted iron fixed against the body of an axle-tree, with straps to take off the friction of the naves of wheels against the body.

HURTERS, in *Fortification*, denote pieces of timber about six inches square, placed at the lower end of the plat-form, next to the parapet, to prevent the wheels of the gun-carriages from damaging the parapet.

HURTS, in *Heraldry*; by some wrote *Heurts*, and by others *Huerts*, are azure or blue rundles.

The English heralds distinguish between the colours of rundles, and give them different names agreeable thereto: those of other nations content themselves to call those *tor-teaux d'azure*; and in other cases only add the respective colour to the term *tor-teaux*.

But these being blue, some will have them to signify bruises or contusions in the flesh, which often turn to that colour: others suppose them whortle berries.

HUS; or **HUSSU**, in *Geography*, a town of European Turkey, in the province of Moldavia, the see of a Greek bishop, situated on the Pruth; 70 miles S.W. of Bender. N. lat. $46^{\circ} 35'$. E. long. $28^{\circ} 34'$.

HUSACKER, one of the small Shetland islands between Mainland and Yell. N. lat. $60^{\circ} 48'$. W. long. $1^{\circ} 35'$.

HUSBAND, **MARTUS**, a man joined or contracted with a woman in marriage. See **COVERTURE** and **MARRIAGE**. See also **DIVORCE**, **DOWER**, **FEME-COVERT**, &c.

HUSBAND Land, a term used in Scotland for a portion of land containing six acres (= 7.624464 English statute acres) of fock and scythe land; that is, of land that may be tilled with a plough, and mown with a scythe.

HUSBANDMAN, in *Agriculture*, the common name of the labourer or person who is engaged in the tillage and cultivation of the soil. It has been, in general, too much the practice to despise and depress the habits and talents of this most valuable class of society; as by such means the necessary ardour and spirit of exertion are much abated, and the improvement of husbandry greatly retarded.

The ingenious author of the "Wealth of Nations" has drawn the following curious and interesting comparison between this sort of labourer, and the artizan or mechanic. He says, that "not only the art of the farmer, the general direction of the operations of husbandry, but many inferior branches of labour require much more skill and experience than the greater part of mechanic trades. The man who works upon brass and iron works with instruments, and upon materials of which the temper is always the same, or very nearly the same: but the man who ploughs the ground with a team of horses or oxen, works with instruments of which the health, strength, and temper are very different upon different occasions. The conditions of the materials which he works upon, too, are as variable as that of the instruments he works with, and both require to be managed

with great judgment and discretion. The common ploughman, though generally regarded as the pattern of stupidity and ignorance, is seldom defective in his judgment and discretion: he is less accustomed, indeed, to social intercourse than the mechanic who lives in town. His voice and language are more uncouth and more difficult to be understood by those who are not used to them. His understanding, however, being accustomed to consider a greater variety of objects, is generally much superior to that of the other, whose whole attention, from morning to night, is commonly occupied in performing one or two simple operations. How much the lower ranks of people in the country are really superior to those of the town is well known by every man, whom either business or curiosity have led to converse much with both. In China and Hindoostan, accordingly, both the rank and the wages of country labourers are said to be superior to those of the greater part of artificers and manufacturers. They would probably be so every where, if corporation laws and the corporation spirit did not prevent it."

There can be no doubt of the vast utility and national advantage of promoting the spirit, and encouraging the exertions of the labourers in agriculture; as, however high the benefits of commerce may be estimated, it is only the raising of the necessary food for the support of the population of a nation within itself, that can render it truly great, happy, and independent.

HUSBANDRY, a general name applied to the art, business, or employment of the farmer, or of those engaged in the tillage and cultivation of the soil. There are various descriptions of husbandry depending on the particular views of the cultivator, and the methods of management which are adopted.

Hence, in regard to tillage or arable lands, these are the *broad-cast* and *drill-husbandry*, and it is often further divided by the way of distinction into what are termed the *old* and *new* husbandry; the former of which is supposed to be that which has been had recourse to from the most early periods; and the latter that which has been said to have been introduced and inculcated by the intelligent Mr. Tull and his followers. This last is likewise occasionally distinguished by the title of the *horse-boeing* husbandry. But though this husbandry be generally denominated *new* in this country, there is reason to believe that it is not so modern as has been commonly supposed, as it has been ascertained that in many of the eastern nations, where very few, if any, changes in their agricultural practices have occurred for many ages, it is for most sorts of crops the most usual mode. See **HUSBANDRY**, *Drill*.

It may be further noticed here, that the broad-cast husbandry is that kind of arable management in which the seed is thrown and dispersed over the ground by a sort of cast of the hand, without much regard being paid to the regularity of the crop, or the means of its after-culture. Besides, it was supposed by some farmers, that in this mode much less preparation of the land was necessary, but the contrary has been fully proved by later and more extensive experience.

And the drill-husbandry is that in which the grain or other kinds of crops are sown, set, or put into the soil, in rows, drills, or trenches, at different distances, by tools and machines contrived for the purpose, in order to be cultivated afterwards with implements particularly suited to them. In this way the seed is put into the soil with much more regularity and exactness, both in respect to evenness and depth, as well as the after-culture performed with much greater correctness and attention by the use of proper hoes and horse labour.

HUSBANDRY.

In cases where neither of these modes is exactly followed, but there is a kind of mixture of them both; or where two sorts of crops of different descriptions are cultivated together, in alternate rows, there is what has been frequently denominated *half-husbandry*: and where the ground is cultivated alternately in tillage and grafs, there is that fort which is usually called *convertible husbandry* by modern farmers.

There are also particular methods of cultivation adopted on extensive tracts of ground in the state of commonage, which afford what is frequently denominated *common-field husbandry*.

With respect to lands in the state of grafs, there are likewise *dairy*, *grazing*, and *grafs* husbandry, according as the grounds are appropriated to the keeping of cows for milk, butter, or cheefe, the feeding or fattening of different sorts of live-stock, and the making of grafs into hay to be used as fodder.

The culture of particular sorts of crops also gives rise to different terms of this nature; hence there is *turnip*, *cabbage*, *carrot*, and *potatoe* husbandry, &c.

In these different points of view, husbandry, of course, comprises the whole of the numerous operations, processes, and modes of management which are necessary in the extensive business of cultivation, either in regard to tillage or grafs, or the breeding, rearing, and keeping all sorts of live stock of the domestic kinds.

It is sufficiently evident, that very great improvements have been accomplished in the various branches of husbandry within these few late years by the introduction of more correct and better modes of cropping and managing lands, as well as by the gradual influence and adoption of better and more suitable tools and machines for executing the business of the farmer.

A late writer has laid down the following comparative estimates of the difference in the advantage between an acre of land cultivated under the old plan of fallowing once in every three years, or two crops and a fallow, which is supposed not to run out or exhaust the ground; and that of the more modern system of alternating green, or smothering crops, with those of the grain kind.

Old System of Husbandry.

1st Year, Fallow.

| | £. | s. | d. |
|---|----|----|----|
| Four ploughings and harrowings, at 6s. each | 1 | 4 | 0 |
| Twelve loads of manure, at 8s. per load | 4 | 16 | 0 |

2d Year, Barley.

| | | | |
|----------------------------------|---|---|---|
| Ploughing, harrowing, and sowing | 0 | 6 | 6 |
| Weeding the crop | 0 | 0 | 6 |

3d Year, Beans.

| | | | |
|----------------------------------|---|---|---|
| Ploughing, harrowing, and sowing | 0 | 6 | 6 |
| Weeding | 0 | 0 | 6 |

4th Year, Fallow.

| | | | |
|---|---|----|---|
| Ploughing three times, and harrowing, 6s. each time | 0 | 18 | 0 |
|---|---|----|---|

5th Year, Wheat.

| | | | |
|----------------------|---|----|---|
| Ploughing and sowing | 0 | 6 | 0 |
| Weeding | 0 | 0 | 6 |
| Carry over | 7 | 18 | 6 |

6th Year, Oats.

| | £. | s. | d. |
|----------------------|----|----|----|
| Brought over | 7 | 18 | 6 |
| Ploughing and sowing | 0 | 6 | 6 |
| Weeding | 0 | 0 | 6 |
| <u> </u> | 8 | 5 | 6 |

New System of Husbandry.

1st Year, Turnips.

| | | | |
|---|---|----|---|
| Ploughing an inch and a half deep | 0 | 4 | 0 |
| Harrowing, raking, rolling, &c. | 0 | 3 | 6 |
| Ploughing twice, harrowing, raking, &c. | 0 | 13 | 0 |
| Leading off refuse | 0 | 1 | 0 |
| Seed and sowing | 0 | 1 | 6 |
| Making of drills | 0 | 2 | 6 |
| Three times ploughing the turnips, and hoeing | 0 | 8 | 6 |
| Six loads of manure, at 8s. per load | 2 | 8 | 0 |

2d Year, Barley.

| | | | |
|--------------------------------------|---|---|---|
| Ploughing and sowing, harrowing, &c. | 0 | 6 | 6 |
| Weeding | 0 | 0 | 3 |

3d Year, Beans or Peas.

| | | | |
|--|---|----|---|
| Two ploughings, harrowings, raking, &c. | 0 | 13 | 0 |
| Drill-making | 0 | 2 | 6 |
| Four loads of manure, at 8s. per load | 1 | 12 | 0 |
| Three times ploughing, to mould the peas and destroy the weeds | 0 | 4 | 9 |
| Leading off refuse | 0 | 1 | 0 |

4th Year, Wheat.

| | | | |
|------------------------|---|---|---|
| Scarifying | 0 | 2 | 6 |
| Ploughing, sowing, &c. | 0 | 6 | 0 |
| Weeding | 0 | 0 | 3 |

5th Year, Clover.

6th Year, Wheat.

| | | | |
|----------------------|---|---|---|
| Ploughing and sowing | 0 | 6 | 6 |
| Weeding | 0 | 0 | 3 |

| | | | |
|-------------------------------------|---|----|---|
| <u> </u> | 7 | 17 | 6 |
| Balance in favour of the new system | 0 | 8 | 0 |
| <u> </u> | 8 | 5 | 6 |

Hence it would appear that the expences of the new method of husbandry are not only less by eight shillings the acre than those of the old the first six years, but will somewhat decrease in the next six, except in manure, which will be more, as in the new mode the reservoir and five crops of straw will, it is supposed, produce nearly double the quantity. Besides, in the first way, the manure is all raised from the produce of the land it is laid on: but to make the twelve loads, the old farmer robs the meadow, or any piece of fresh land he is permitted to plough up. This is supposed the principal cause why so many tenants are restricted from ploughing old fwards, as they do not return the manure to its proper situation, or lay it on in such a manner as is proper.

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In all these estimates it is supposed that every acre of straw, where the crop is a good one, is capable of affording two loads of manure; consequently, by the old plan, even admitting the crop to be good, which is often not the case, there would be only eight loads of manure raised in six years; but, by the new, 10 loads, even without the assistance of the reservoir; and in the following six years, where the new system is pursued, 14 loads may be expected. In these statements the manure is charged as an expence, which is not right, where it is not purchased but raised on the ground.

If these calculations can be depended upon, there can be no doubt of the great superiority of the green-crop practice over that of the fallow method.

Other statements, by the same writer, on the differences of these different systems of management, on farms of different kinds, render the matter still more obvious.

I. *Tillage Farm—extent 139 Acres.—It is situated in a northern county, that of York.*

Old Method of Husbandry.

Dr. to Expences.

| | £. | s. | d. |
|---|-----|----|----|
| Twenty-three acres of wheat, ploughing, sowing, &c. at 7s. per acre | 8 | 1 | 0 |
| Seed, 23 loads, at 18s. per load | 20 | 14 | 0 |
| Reaping, leading, &c. at 10s. per acre | 11 | 10 | 0 |
| Threshing, dressing, 161 loads at 1s. per load | 8 | 1 | 0 |
| Mowing stubble, 3s. per acre | 3 | 9 | 0 |
| Nine acres of barley, ploughing, &c. at 7s. per acre | 3 | 3 | 0 |
| Seed, four quarters four bushels, at 25s. per quarter | 5 | 12 | 6 |
| Reaping, leading, &c. at 8s. per acre | 3 | 12 | 0 |
| Threshing, &c. 36 quarters, at 1s. 6d. per quarter | 2 | 14 | 0 |
| Twenty-three acres oats, ploughing, &c. at 7s. per acre | 8 | 1 | 0 |
| Seed, 14 quarters three bushels, at 12s. per quarter | 8 | 12 | 6 |
| Reaping, leading, &c. at 6s. per acre | 6 | 18 | 0 |
| Threshing, &c. 92 quarters at 1s. per quarter | 4 | 12 | 0 |
| Four and half acres of beans, ploughing, &c. at 7s. per acre | 1 | 11 | 6 |
| Seed, two quarters two bushels, at 24s. per quarter | 2 | 14 | 0 |
| Reaping, &c. at 8s. per acre | 1 | 16 | 0 |
| Twelve acres hay, harvesting, at 5s. per acre | 3 | 0 | 0 |
| Twenty acres fallow, four times ploughing, &c. at 5s. 6d. per acre | 22 | 0 | 0 |
| One hundred and forty-two loads of manure, at 8s. per load | 56 | 16 | 0 |
| Rent | 110 | 0 | 0 |
| Assessments, at 5s. | 27 | 10 | 0 |
| | 320 | 7 | 6 |

Cr. by Produce.

| | £. | s. | d. |
|---|-----|----|----|
| Wheat, 23 acres, seven loads per acre, at 18s. per load | 144 | 18 | 0 |
| Carry over | 144 | 18 | 0 |

| | £. | s. | d. |
|---|-----|----|----|
| Brought over | 144 | 18 | 0 |
| Barley, nine ditto, four quarters per acre, at 25s. per quarter | 45 | 0 | 0 |
| Oats, 23 ditto, four quarters per acre, at 12s. per quarter | 55 | 4 | 0 |
| Beans, four and a half ditto, three ditto per acre, at 24s. per quarter | 16 | 4 | 0 |
| 59½ acres under plough | | | |
| 20 ——— in fallow | | | |
| 59½ ——— in grafs | | | |
| 139 total quantity of acres. | | | |
| Fifty-nine and a half acres straw, &c. at 1l. per acre | 59 | 10 | 0 |
| Twelve ditto hay, at one ton per acre, 4l. per ton | 48 | 0 | 0 |
| Profit on five cows, at 5l. 5s. per cow | 26 | 5 | 0 |
| Profit of a bull, per annum | 5 | 5 | 0 |
| Nine wethers | 18 | 0 | 0 |
| Twenty fat lambs | 15 | 0 | 0 |
| Wool, 30 fleeces, at 3s. each | 4 | 10 | 0 |
| One horse (suppose) sold in two years, will be the half of a horse in this year's profits | 8 | 0 | 0 |
| Pigs | 5 | 0 | 0 |
| | 450 | 16 | 0 |
| Profit | 130 | 8 | 6 |

New Method of Husbandry.

Dr. to Expences.

Twenty Acres in Turnip, Fallow.

| | £. | s. | d. |
|---|----|----|----|
| Two ploughings, &c. carrying twitch off, &c. at 7s. each | 14 | 0 | 0 |
| Six loads of manure per acre, leading on, &c. at 8s. per load | 48 | 0 | 0 |
| Drilling at 2s. 6d. per acre | 2 | 10 | 0 |
| Seed, 6d. per acre | 0 | 10 | 0 |
| Hoeing, and three times ploughing, 2s. each time per acre | 6 | 0 | 0 |

Twenty Acres Wheat-Crop.

| | | | |
|---|----|---|---|
| Ploughing, sowing, &c. 7s. per acre | 7 | 0 | 0 |
| Seed, 20 loads, 18s. per load | 18 | 0 | 0 |
| Reaping, and leading, 10s. per acre | 10 | 0 | 0 |
| One hundred and sixty loads threshing, &c. 1s. per load | 8 | 0 | 0 |
| Stubble mowing, &c. 3s. per acre | 3 | 0 | 0 |

Twenty Acres Peas-Crop.

| | | | |
|---|----|----|---|
| Ploughing, harrowing, &c. twice, 7s. per acre each | 14 | 0 | 0 |
| Seed, 10 quarters, at 32s. per quarter | 16 | 0 | 0 |
| Drill, 2s. 6d. per acre | 2 | 10 | 0 |
| Four loads of manure per acre, leading, &c. at 8s. per load | 32 | 0 | 0 |
| Three ploughings per acre, 1s. 6d. per acre each | 4 | 10 | 0 |

Carry over 186 0 0

Reaping

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| | £. | s. | d. |
|--|-----|----|----|
| Brought over | 186 | 0 | 0 |
| Reaping and threshing 240 loads, at 8d. per load | 8 | 0 | 0 |

Twenty Acres Barley-Crop.

| | | | |
|--|----|----|---|
| Ploughing, &c. and sowing, 7s. per acre | 7 | 0 | 0 |
| Seed, four bushels per acre, at 25s. per quarter | 12 | 10 | 0 |
| Clover-feed, 14lb. trefoil, 6lb. | 8 | 10 | 0 |
| Reaping and leading, at 8s. per acre | 8 | 0 | 0 |
| Threshing, &c. 80 quarters, at 1s. 6d. per quarter | 6 | 0 | 0 |

Twenty Acres Clover-Grafs.

| | | | |
|---|----|---|---|
| Six loads of manure per acre, at 8s. per load | 48 | 0 | 0 |
| Mowing, &c. twice, 6s. per acre | 12 | 0 | 0 |

Twenty Acres Wheat-Crop.

| | | | |
|-------------------------------------|-----|----|---|
| Ploughing, sowing, &c. 7s. per acre | 7 | 0 | 0 |
| Seed, 20 loads, 18s. per load | 18 | 0 | 0 |
| Reaping and leading, 10s. per acre | 10 | 0 | 0 |
| Threshing, &c. at 1s. per load | 8 | 0 | 0 |
| Stubble mowing, at 3s. per acre | 3 | 0 | 0 |
| Rent and assessments | 137 | 10 | 0 |
| | 479 | 10 | 0 |

Cr. by Produce.

| | £. | s. | d. |
|--|-----|----|----|
| Twenty acres turnips, at 4l. per acre | 80 | 0 | 0 |
| Twenty ditto wheat, eight loads per acre, at 18s. per load | 144 | 0 | 0 |
| Twenty ditto peas, 12 loads per ditto, at 12s. per load | 144 | 0 | 0 |
| Twenty ditto barley, four quarters per ditto, at 25s. per quarter | 100 | 0 | 0 |
| Twenty ditto clover, two ton per ditto, at 4l. per ton | 160 | 0 | 0 |
| Twenty ditto wheat, eight loads per ditto, at 18s. per load | 144 | 0 | 0 |
| Eighty acres straw, at 20s. per acre | 80 | 0 | 0 |
| Profit brought from account of 10 acres managed according to the new system, as seen below | 80 | 0 | 0 |
| | 932 | 0 | 0 |

Profit 452 10 0

It is imagined that the whole of the houses, barns, buildings, and fences of the farm may occupy nine acres, which will leave 10 acres for the keep of the cows, horses, &c. To answer which purpose they are advised to be cropped in this way: three acres and a half with winter tares; two and a half with summer cabbages, and potatoes under them; and the four that remain with spring tares, or a part of them with buck-wheat. These 10 acres are to supply the place of the 59½ allowed for the same use under the old plan, constantly supposing the farm buildings to occupy the quantity above stated. These 10 acres must necessarily cost something in cultivating; but when well managed, they will, it is supposed, keep 40 head of neat cattle and horses in summer with cut straw; and the farmer will thereby have 120 acres of straw, clover, &c. where he had, under the old mode, only 59½; besides, the crops will be much more

bulky, and the quantity of manure constantly increase by the keeping so many cattle, horses and pigs, in the yards, summer and winter; and as the food that is advised is too rich for breeding flock where six cows are kept, as already noticed, 26 feeding beasts will be also wanted, which may afford an average profit of five guineas each, though more may be produced; as two returns may be made. But as these profits may be doubted by some, they are explained more fully by a debtor and creditor account; and the 10 are supposed to be set with potatoes at first, to clean and prepare the land for the tares, &c. carrying the profit on them to the general account, as being part of the crop of the first year of the improved husbandry.

Under Potatoes 10 Acres.

New System of Husbandry.

Dr. to Expences.

| | £. | s. | d. |
|--|----|----|----|
| Ploughing 10 acres, at 7s. per acre | 7 | 0 | 0 |
| One hundred and twenty sacks of potatoes for seed, at 3s. per sack | 18 | 0 | 0 |
| Harrowing at different times, at 2s. per acre | 1 | 0 | 0 |
| Ploughing up at 5s. per acre | 2 | 10 | 0 |
| | 25 | 0 | 0 |

Cr. by Produce.

| | £. | s. | d. |
|---|-----|----|----|
| By 10 acres, sold at 10l. 10s. per acre | 105 | 0 | 0 |
| Profit carried to the general account of one years profit | 80 | 0 | 0 |

It is supposed that in this case the potatoe crop is sold upon the land, as it is not easy to estimate the expences when the potatoes are disposed of at the market, or double the sum stated would be made of them; as 100 sacks, at 3s. each, would afford 15l. the acre, or 150l. in the whole; but if they were properly cultivated there would be 150 sacks to the acre.

Land under the New System of Husbandry.—10 Acres.

Dr. to Expences.

| | £. | s. | d. |
|--|----|----|----|
| Three and a half acres ploughing, harrowing, and sowing, at 7s. per acre | 1 | 4 | 6 |
| Seed tares, two bushels per acre, at 10s. per bushel, and half a peck of rye at 6d. per peck | 3 | 11 | 9 |
| One acre and a half of cabbages, ploughing, &c. at 7s. per acre | 0 | 10 | 6 |
| Two acres and a half drilling, at 2s. 6d. per acre | 0 | 6 | 3 |
| Plants which must be raised on a seed-bed, 4lb. of seed; at 6s. per lb. digging the garden, and sowing | 1 | 9 | 0 |
| Planting, at 5s. per acre | 0 | 12 | 6 |
| Four acres, three times ploughing and sowing at 7s. per acre | 4 | 4 | 0 |
| Manure for ten acres every year, at four loads per acre; at 8s. per load | 16 | 0 | 0 |
| | 27 | 18 | 6 |

Cr.

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Cr. by Produce.

| | £ | s. | d. |
|--|-----|----|----|
| By the profit of 32 beafts, at an average of 5 <i>l.</i> 5 <i>s.</i> per beaft | 168 | 0 | 0 |
| Profit by this mode | 140 | 1 | 6 |

It is noticed that this return of profit seems great, but arises from the vast supply of food that is afforded by the 10 acres of land under tares and rye, when combined with cut straw in the keeping of live stock. As 10 horses have been found capable of being kept thirteen months on six acres of wheat-scourge, and the same extent of oats, it may be readily conceived that 10 acres of green fodder, in connection with the same number in wheat for straw, will keep 40 head of neat cattle and horses for the summer; consequently, 40 acres of wheat straw, 20 acres of clover twice mown, 20 acres of barley-straw, and 20 acres of pea-straw, in combination with 20 acres of turnips, will keep with facility 32 head of beafts, and eight horses, through the winter season. It is evident, therefore, that the produce of the ten acres in green food, in connection with the straw and clover of the other portions, will, under proper management, accomplish what has been stated.

It may be added, that cabbages of the early kind will be ready to cut early in June, and may be kept in use all the summer, as, before one portion is cut over, the sprouts of another will be in a state to cut again. These cabbages should be given to such beafts as are the nearest ready for the market. As soon as the winter tares and rye have been consumed, Savoy cabbages should be put in the land. The tares will be mown in summer, and the cabbages will serve the cattle in winter, and be soon enough off the ground to sow it with tares in the spring. The land where the spring-cabbages have grown should be sown with winter-tares, in the drill method, in the autumn, using from four to six loads of dung to the acre for each crop. In the manner of the garden, therefore, these 10 acres are to be constantly covered with crops, for the use of neat cattle and other sorts of live stock.

Though 20 acres have been put down for turnips, to be employed in feeding neat cattle in the yard, the whole will not by any means be wanted, so that one-half, or perhaps more, may often be converted to the use of the sheep, and in that way a profit be afforded, which has not been taken into the account. Besides, the quantity of manure stated under the improved husbandry is supposed much less than will be produced.

But allowing, under the improved practice, an additional man and boy to look after the live stock, the former, at the expence of 12*s.* a-week, and the latter at 6*s.* per week; rejecting the fractional parts, and taking 52 weeks for the year, there will be 46*l.* 16*s.* to deduct, which will leave the balance of 405*l.* 14*s.* Thus the profit by the old method being 130*l.* 8*s.* 6*d.* which, taken from the 405*l.* 14*s.* leaves the net balance of profit in favour of the improved husbandry to be 275*l.* 5*s.* 6*d.*

On the old plan, the profit of a horse in two years was estimated at 16*l.* which, taken for one year only, or one half, is 8*l.* and for pigs 5*l.* as already stated, which sums, added to 275*l.* 5*s.* 6*d.* make, in the whole, 288*l.* 5*s.* 6*d.*; and the 80*l.* for the potatoes, being only brought to the account, though the net profit from the 10 acres, in green crops, is 140*l.* 1*s.* 6*d.* the aggregate sum will be 348*l.* 7*s.* which seems a large amount.

But, in this improved management in tillage and live stock, manure is raised of so much better quality, in such

plenty, and at so much cheaper a rate, than by purchasing it, as is the general custom of the vicinity of the farm, that it is hardly worth fetching from the large towns; and as it is the very soul of husbandry, every crop will be raised in far greater abundance.

It is however remarked, in conclusion, that there are different advantages, in regard to situation, that attend this farm, which, from their local nature, will not apply to those afterwards noticed. It may be supposed that the profit on the beafts is laid too high; for though, when cattle are fed on grafs, the season may possibly vary so much that double the quantity of stock may be carried at one time to what the same land is capable of at another; of course, as it is common to put on the same number of cattle every year, it may, in some dry periods, be much overloaded with stock, while in others, which are more moist, there may be a deficiency, under either of which circumstances there must be loss sustained; but where food is provided in the way just stated, the green-crops mostly become so forward before the dry weather occurs, that they are not injured by it, and the stock, where properly chosen, by the use of the fold or stall-feeding, with certainty becomes quickly fat. Every thing is in this mode daily regular, and the animals daily increase to the profit of their owners. Advantages are also afforded, in different ways, by the contiguity of markets, as in the sale of, and jobbing in neat cattle, horses, &c. and likewise in the strength of the teams that may be necessary.

It may be noticed, that, in these estimates, it is supposed that all the ploughing, sowing, and leading should be had and paid for. As the accounts are drawn out, they of course incline much in favour of the old plan of husbandry, as the expences are less in number than will be actually incurred in that way, being made for the purpose of exhibiting at one view the vast disparity which is really found to exist in the practice of the two different modes on farms of a similar description. That the profits can be ascertained with exactness is probably impossible, in consequence of the great fluctuation of markets, by which no person can be exact in the estimates of the value of corn or cattle for the space of six months together. The expences have, however, been constantly estimated at a higher rate than it is known they can be done for, that the old method of husbandry might not be supposed to be unfairly dealt with.

These estimates of profits, whether they rest upon the basis of experience or not, sufficiently point out, that vast benefits may be drawn from the culture of green and other cattle crops, and the conversion of them to the feeding and fattening of various kinds of domestic animals.

II. *A Mixed or Grazing, Breeding, and Tillage-Farm.*

Extent 314 Acres.—It is situated in the county of Lincoln.

The estimates here display the benefits of different modes of management, where several kinds of husbandry are carried on in combination.

At present part of the farm is divided into four divisions for the plough, each division consisting of twenty-four acres. And there is an additional division of the same land, comprising sixteen acres, and about fourteen acres of clay land, which is also under the plough. The four large divisions, and that of sixteen acres, are on a lime-stone soil, but the remainder on clay, and liable to rot sheep. These together make 126 acres, all under the plough on the old plan. There is of course remaining 188 acres, which are wholly in grafs, and converted to the purpose of raising 140 lambs, or tuppings 140 ewes, the hog sheep being fold off in the spring, and the drapewees at Michaelmas, and the support

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ing of twelve horses and thirty head of beasts. The manner of cropping is that of the old method, of turnips, barley, clover, and wheat, which perhaps is as good as any, the farm being converted to the breeding of sheep, which is highly lucrative.

The expences and produce are thus stated.

Annual Mode of Husbandry, under the old System.

Dr. to Expences.

First Plat.

| | £. | s. | d. |
|---|-----|----|----|
| To following twenty-four acres for turnips; four times ploughing, harrowing, &c. at 6s. per acre each | 28 | 16 | 0 |
| Twelve loads of manure at 8s. per acre | 115 | 4 | 0 |
| Seed and hoeing, 6s. per acre | 7 | 4 | 0 |

Second.

| | | | |
|--|----|---|---|
| Ploughing twenty-four acres for barley, at 7s. per acre | 8 | 8 | 0 |
| Seed, four bushels per acre, at 25s. per quarter | 15 | 0 | 0 |
| Clover-feed, 14lb. per acre, at 6d. per lb. | 8 | 8 | 0 |
| Reaping and leading, at 6s. per acre | 7 | 4 | 0 |
| Threshing, &c. ninety-six quarters, at 1s. 4d. per quarter | 6 | 8 | 0 |

Third.

| | | | |
|--|---|----|---|
| Clover, mowing, &c. twenty-four acres, at 3s. per acre | 3 | 12 | 0 |
|--|---|----|---|

Fourth.

| | | | |
|--|-----|----|---|
| Twenty-four acres ploughing for wheat, 7s. per acre | 8 | 8 | 0 |
| Seed, three bushels per acre, at 5s. per bushel | 18 | 0 | 0 |
| Reaping and leading, 10s. per acre | 12 | 0 | 0 |
| Threshing, &c. seventy-two quarters, 1s. 8d. per quarter | 6 | 0 | 0 |
| Stubble mowing, 3s. per acre | 3 | 12 | 0 |
| Average expence upon the sixteen acres of cliff-land | 43 | 1 | 0 |
| Following one-third of fourteen acres of clay-land | 6 | 10 | 8 |
| Manure once in three years | 16 | 16 | 0 |
| Rent and assessments | 316 | 4 | 4 |
| | 630 | 16 | 0 |

Cr. by Produce.

| | £. | s. | d. |
|---|-----|----|----|
| By twenty-four acres turnips, at 3l. 10s. per acre | 84 | 0 | 0 |
| Twenty-four acres barley, four quarters per acre, at 25s. per quarter | 120 | 0 | 0 |
| Twenty-four acres clover, one ton and a half per acre, at 1l. per ton | 36 | 0 | 0 |
| Twenty-four acres clover eaten off, at 10s. 6d. 6d. per acre | 12 | 12 | 0 |
| Twenty-four acres wheat, three quarters per acre, at 2l. per quarter | 144 | 0 | 0 |
| Sixteen acres of cliff-land, which appear to be carried on in the same manner, but do not seem to be regular in any crop. Therefore takes | | | |
| Carry over | 396 | 12 | 0 |

Brought over
396 12 0

| | | | |
|---|-----|----|---|
| the average of its produce from the produce of the ninety-six acres above, which are regularly cropped (as the land is of the same kind); but being rather better, will say 4l. 10s. per acre | 72 | 0 | 0 |
| Seven acres of wheat on clay-land, at three quarters per acre, at 2l. per quarter | 42 | 0 | 0 |
| Seven acres beans on ditto, three quarters per acre, 1l. 4s. per quarter | 25 | 4 | 0 |
| Sixty-five hogs (feeders), at 1l. 8s. each | 91 | 0 | 0 |
| Fifty ewes (draps), at 1l. 8s. each | 70 | 0 | 0 |
| Two hundred fleeces of wool, at 1l. 1s. per tod, four fleeces to a tod | 52 | 10 | 0 |
| Six fat beasts, 25l. each | 150 | 0 | 0 |
| Two horses, at 20l. each | 40 | 0 | 0 |
| Pigs | 10 | 0 | 0 |
| | 949 | 6 | 0 |
| Profit | 318 | 10 | 0 |

Annual Mode of Husbandry, under the New System.

Dr. to Expences.

First Plat.

| | £. | s. | d. |
|--|----|----|----|
| To ploughing, &c. twice for turnips on twenty-four acres twitch, &c. raking off, at 6s. per acre | 14 | 8 | 0 |
| Drilling and sowing, 2s. 6d. per acre | 3 | 0 | 0 |
| Seed, 1s. per acre | 1 | 4 | 0 |
| Hoeing, and three times ploughing, at 1s. 6d. per acre | 5 | 8 | 0 |
| Six loads manure, per acre, at 8s. per load | 57 | 12 | 0 |

Second.

| | | | |
|--|----|---|---|
| Ploughing, &c. and sowing, twenty-four acres for barley, at 7s. per acre | 8 | 8 | 0 |
| Seed four bushels, at 25s. per quarter | 15 | 0 | 0 |
| Red-clover, 14lb. per acre, at 6d. per lb.; trefoil, 6lb. per acre, at 3d. per lb.; white clover 6lb. per acre, at 8d. per lb. | 15 | 0 | 0 |
| Reaping and leading, 6s. per acre | 7 | 4 | 0 |
| Threshing ninety-six quarters, at 1s. 4d. per quarter | 6 | 8 | 0 |

Third.

To clover, twenty-four acres eaten by sheep.

Fourth.

| | | | |
|---|----|----|---|
| Twenty-four acres wheat, ploughing, &c. at 7s. per acre | 8 | 8 | 0 |
| Seed, three bushels per acre, at 5s. per bushel | 18 | 0 | 0 |
| Reaping, &c. at 10s. per acre | 12 | 0 | 0 |
| Seventy-two quarters wheat, threshing, &c. at 1s. 8d. per quarter | 6 | 0 | 0 |
| Stubble mowing, 3s. per acre | 3 | 12 | 0 |

Fifth.

Sixteen acres sainfoin mowing, 3s. per acre

2 8 0

184 0 0

Cr.

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| <i>Cr. by Produce.</i> | | Brought over | £. s. d. |
|--|---------|---|----------|
| By twenty-four acres of turnips, at 3 <i>l.</i> 10 <i>s.</i> per acre | 84 0 0 | | 149 2 0 |
| Twenty-four acres barley, four quarters per acre, at 1 <i>l.</i> 5 <i>s.</i> per quarter | 120 0 0 | Reaping, &c. at 10 <i>s.</i> per acre | 7 0 0 |
| Clover eaten by sheep, carried to general account. | | Threshing, &c. fifty-six quarters, at 1 <i>s.</i> 8 <i>d.</i> per quarter | 4 13 4 |
| Twenty-four acres wheat, three quarters per acre, at 2 <i>l.</i> per quarter | 144 0 0 | Stubble mowing, 3 <i>s.</i> per acre | 2 2 0 |
| Sixteen acres faintfoin, two tons per acre, at 2 <i>l.</i> per ton | 64 0 0 | <i>Sixth.</i> | |
| | 412 0 0 | Fourteen acres beans, ploughing, &c. at 7 <i>s.</i> per acre | 4 18 0 |
| Profit | 228 0 0 | Drilling, at 2 <i>s.</i> 6 <i>d.</i> per acre | 1 15 0 |
| | | Six loads of manure per acre, at 8 <i>s.</i> per load | 33 12 0 |
| | | Three times ploughing, at 1 <i>s.</i> 6 <i>d.</i> each per acre | 3 3 0 |
| | | Reaping, threshing, &c. | 7 0 0 |
| | | Rent and assessments, as in the old system account | 316 4 4 |
| | | | 529 9 8 |

Extent of Farm 14 Acres.—It is situated in the county of Lincoln, and at present runs sheep.

General Statement of Expenses and Produce, under the Improved System of Husbandry.

Dr. to Expenses.

First.

| | £. s. d. |
|--|----------|
| Fourteen acres wheat, ploughing, &c. at 7 <i>s.</i> per acre | 4 18 0 |
| Seed, three bushels per acre, 5 <i>s.</i> per bushel | 10 10 0 |
| Reaping, &c. 10 <i>s.</i> per acre | 7 0 0 |
| Threshing, &c. forty-nine quarters, at 1 <i>s.</i> 8 <i>d.</i> per quarter | 4 1 8 |
| Stubble mowing, 3 <i>s.</i> per acre | 2 2 0 |

Second.

| | |
|---|--------|
| Fourteen acres beans or peas ploughing, 7 <i>s.</i> per acre | 4 18 0 |
| Drilling, at 2 <i>s.</i> 6 <i>d.</i> per acre | 1 15 0 |
| Four loads of manure per acre, at 8 <i>s.</i> per load | 22 8 0 |
| Three times ploughing, at 1 <i>s.</i> 4 <i>d.</i> each per acre | 2 16 0 |
| Reaping, &c. 6 <i>s.</i> per acre | 4 4 0 |
| Threshing, &c. fifty-six quarters, at 1 <i>s.</i> per quarter | 2 16 0 |

Third.

| | |
|--|--------|
| Fourteen acres barley, ploughing, at 7 <i>s.</i> per acre | 4 18 0 |
| Seed, four bushels per acre, at 1 <i>l.</i> 5 <i>s.</i> per quarter | 8 15 0 |
| Clover-feed, 14 <i>lb.</i> per acre, at 6 <i>d.</i> per <i>lb.</i> ; 6 <i>lb.</i> trefoil, at 3 <i>d.</i> per <i>lb.</i> | 5 19 0 |
| Reaping and leading, 8 <i>s.</i> per acre | 5 12 0 |
| Threshing fifty-six quarters, at 1 <i>s.</i> 2 <i>d.</i> per quarter | 3 5 4 |

Fourth.

| | |
|--|---------|
| Fourteen acres clover, mowing, &c. at 6 <i>s.</i> per acre | 4 4 0 |
| Six loads of manure per acre, at 8 <i>s.</i> per load | 33 12 0 |
| Fourteen acres wheat, ploughing, &c. at 7 <i>s.</i> per acre | 4 18 0 |
| Seed, three bushels per acre, at 5 <i>s.</i> per bushel | 10 10 0 |
| Carry over | 149 2 0 |

Cr. by Produce.

| | £. s. d. |
|--|-----------|
| By fourteen acres of wheat, three quarters and a half per acre, at 2 <i>l.</i> per quarter | 98 0 0 |
| Fourteen acres peas or beans, four quarters per acre, at 1 <i>l.</i> 4 <i>s.</i> per quarter | 67 4 0 |
| Fourteen acres barley, four quarters per acre at 1 <i>l.</i> 4 <i>s.</i> per quarter | 70 0 0 |
| Fourteen acres clover, two tons and a half per acre, at 2 <i>l.</i> per ton | 70 0 0 |
| Fourteen acres wheat, four quarters per acre at 2 <i>l.</i> per quarter | 112 0 0 |
| Fourteen acres beans, four quarters per acre, at 1 <i>l.</i> 4 <i>s.</i> per quarter | 67 4 0 |
| Profit brought from the four plats | 228 0 0 |
| Profit on beafts, horses, sheep, wool, pigs, &c. brought from account in old system, being the same in new | 413 10 0 |
| | 1125 18 0 |
| Profit | 596 8 4 |

This management is explained in this way.

| | |
|--|------------------|
| 100 Acres of grafs, three sheep to every two acres | 150 <i>sheep</i> |
| 10 Ditto, for feeding beafts, and a few tups | 4 <i>tups</i> |
| 72 ditto, for ploughing (in three plats) as before described: with | |
| 24 Ditto, sown with graffes to keep sheep upon, five to an acre | 120 <i>sheep</i> |
| | 274 |
| 84 Ditto clay foil, under rotation of crops | |
| 16 Ditto of faintfoin for hay | |
| 8 Ditto of meadow to cut green, for the purpose of foiling horses in the fold or stable: | |
| <u>314 Acres.</u> | |

which is conceived the most beneficial mode of keeping them, and beyond comparison preferable to letting them run over the grafs, if it were only for the advantage of the manure, which is extremely valuable to the land.

It is hinted, that on such a farm, at least forty head of neat

HUSBANDRY.

neat cattle and horses should be kept, winter and summer, in the yards and stable, but twice that number might be had; which, by the use of the green food, would furnish a vast supply of good manure, far better than such as is raised in the usual way during the winter season. And by blending the straw with the green fodder, it may be eaten up with much more profit than in the usual way; while the stock are kept in far better condition.

It is believed that the evil of the land rotting sheep stock is remedied by the conversion of the eighty-four acres of clay land into tillage, and the custom of eating off the feeds, faintfoin, edish, &c. The horses may be foiled in the stalls and yards, to avoid the injury of poaching, and thereby most of them be kept up.

And as the stock of sheep is increased by seventy, provided the statement be accurate, in the place of felling the hog-sheep, they may be kept for wedders. However, if danger from rot be apprehended, the cattle stock may be augmented, and be probably as profitable; the old number of sheep (200) being only retained to clip; the feeds on the twenty-four acres, part of the ninety-six estimated to keep five sheep per acre, by being sown with grafs seeds, in the spring, being eaten by the proportion of four sheep to the acre: but suppose the number to be a hundred, as fifty of the last sheeder hogs, and the same quantity of shearing ewes, there only remain then a hundred sheep for one hundred acres of grafs-land, and of course there must be the means of keeping a number of beasts in addition, or of having some portion of the land under meadow.

And in the common custom of felling off the drape-ewes by removing the lambs from them early in June, or the succeeding month, it is supposed the ewes may have sufficient time to become fat before the setting in of the winter, and be fold; and the sixteen acres of faintfoin-edish being supposed to insure a profit on the sheep greater than that usually obtained. Farther, that the lambs, by being put to the faintfoin, would be preserved sound, while the ewes were in a fattening state.

Farm consisting of Open Tillage-land.

Extent several Hundred Acres.—It is situated in the north-riding of Yorkshire, and managed on the old plan adopted in many parts of that district as the most beneficial.

The course of husbandry pursued is one fallow and two crops, in this way.

- 1st year, fallow, manured,
- 2d year, barley,
- 3d year, beans,
- 4th year, fallow,
- 5th year, wheat,
- 6th year, oats.

Old System of Husbandry.

Dr. to Expences.

First Year, Fallow.

| | £. | s. | d. |
|--|----|----|----|
| Four ploughings and harrowings, &c. at 7s. | 1 | 8 | 0 |
| Twelve loads of manure, at 8s. per load | 4 | 16 | 0 |
| One year's rent | 15 | 0 | 0 |
| Assessments | 1 | 10 | 0 |
| Tithe | 1 | 6 | 0 |
| | 24 | 0 | 0 |

Cr. by Produce.

| | £. | s. | d. |
|---------|----|----|----|
| No crop | 0 | 0 | 0 |
| | 0 | 0 | 0 |

Dr. to Expences.

Second Year, Barley.

| | £. | s. | d. |
|-------------------------|----|----|----|
| Ploughing and harrowing | 0 | 6 | 6 |
| Seed, four bushels | 0 | 12 | 6 |
| Reaping and threshing | 0 | 12 | 6 |
| Rent | 0 | 15 | 0 |
| Assessments | 0 | 10 | 0 |
| Tithe | 0 | 6 | 0 |
| | 3 | 2 | 6 |

Cr. by Produce.

| | £. | s. | d. |
|-------------------------------------|----|----|----|
| Four quarters of Barley, at 1l. 5s. | 5 | 0 | 0 |
| Straw | 1 | 0 | 0 |
| | 6 | 0 | 0 |

Dr. to Expences.

Third Year, Beans.

| | £. | s. | d. |
|-------------------------|----|----|----|
| Ploughing and harrowing | 0 | 6 | 6 |
| Seed, four bushels | 0 | 16 | 0 |
| Reaping and threshing | 0 | 12 | 0 |
| Rent | 0 | 15 | 0 |
| Assessments | 0 | 10 | 0 |
| Tithe | 0 | 6 | 0 |
| | 3 | 5 | 6 |

Cr. by Produce.

| | £. | s. | d. |
|--|----|----|----|
| Three quarters of beans, at 1l. 12s. per quarter | 4 | 16 | 0 |
| Straw | 1 | 0 | 0 |
| | 5 | 16 | 0 |

Dr. to Expences.

Fourth Year, Fallow.

| | £. | s. | d. |
|---------------------------------------|----|----|----|
| Ploughing three times, harrowing, &c. | 1 | 1 | 0 |
| Rent | 0 | 15 | 0 |
| Assessments | 0 | 10 | 0 |
| Tithe | 0 | 6 | 0 |
| | 2 | 12 | 0 |

Cr. by Produce.

| | £. | s. | d. |
|---------|----|----|----|
| No crop | 0 | 0 | 0 |
| | 0 | 0 | 0 |

Dr.

HUSBANDRY.

| <i>Dr. to Expenses.</i> | | | | <i>Brought over</i> | | | |
|---------------------------|----|----|----|---------------------|----|---|----------|
| <i>Fifth Year, Wheat.</i> | | | | | | | |
| | £. | s. | d. | | | | £. s. d. |
| Ploughing | - | - | - | 0 | 5 | 0 | 0 7 6 |
| Seed wheat, three bushels | - | - | - | 0 | 18 | 9 | 0 7 6 |
| Rent | - | - | - | 0 | 15 | 0 | 0 5 0 |
| Assessment | - | - | - | 0 | 10 | 0 | 0 2 6 |
| Tithe | - | - | - | 0 | 6 | 0 | 0 2 6 |
| Reaping and threshing | - | - | - | 0 | 15 | 0 | 0 2 6 |
| | | | | 3 | 9 | 9 | 0 7 6 |
| | | | | | | | 0 7 6 |
| | | | | | | | 0 5 0 |
| | | | | | | | 0 2 6 |
| | | | | | | | 0 2 6 |
| | | | | | | | 2 8 0 |
| | | | | | | | 1 5 0 |
| | | | | | | | 0 6 0 |
| | | | | | | | 0 6 0 |
| | | | | | | | 0 1 0 |
| | | | | | | | 0 4 6 |
| | | | | | | | 5 11 0 |

| <i>Cr. by Produce.</i> | | | | <i>Cr. by Produce.</i> | | | |
|---|----|----|----|------------------------|--|--|----------|
| <i>Three quarters of wheat, at 2l. 10s. per quarter</i> | | | | <i>Turnips</i> | | | |
| | £. | s. | d. | | | | £. s. d. |
| Three quarters of wheat, at 2l. 10s. per quarter | 7 | 0 | 0 | | | | |
| Straw | 1 | 0 | 0 | | | | |
| | 8 | 0 | 0 | | | | 4 0 0 |

| <i>Dr. to Expenses.</i> | | | | <i>Dr. to Expenses.</i> | | | |
|--------------------------|----|----|----|-----------------------------|----|---|----------|
| <i>Sixth Year, Oats.</i> | | | | <i>Second Year, Barley.</i> | | | |
| | £. | s. | d. | | | | £. s. d. |
| Ploughing and harrowing | - | - | - | 0 | 6 | 6 | 0 7 6 |
| Seed, four bushels | - | - | - | 0 | 8 | 0 | 0 12 6 |
| Rent | - | - | - | 0 | 15 | 0 | 1 5 0 |
| Assessments | - | - | - | 0 | 10 | 0 | 0 6 0 |
| Tithe | - | - | - | 0 | 6 | 0 | 0 6 0 |
| Reaping and leading | - | - | - | 0 | 6 | 6 | 0 12 0 |
| Threshing | - | - | - | 0 | 4 | 0 | |
| | | | | 2 | 16 | 0 | 3 3 0 |

| <i>Cr. by Produce.</i> | | | | <i>Cr. by Produce.</i> | | | |
|---|----|----|----|--|---|---|----------|
| <i>Four quarters of oats, at 16s. per quarter</i> | | | | <i>Barley, four quarters, at 1l. 5s. per quarter</i> | | | |
| | £. | s. | d. | | | | £. s. d. |
| Four quarters of oats, at 16s. per quarter | 3 | 4 | 0 | Barley, four quarters, at 1l. 5s. per quarter | 5 | 0 | 0 |
| Straw | 1 | 0 | 0 | Straw | 1 | 0 | 0 |
| | 4 | 4 | 0 | | 6 | 0 | 0 |

| | | | | | | | |
|--|----|----|---|--|--|--|--|
| Total for the Cr. | 24 | 10 | 0 | | | | |
| Total for the Dr. | 23 | 0 | 9 | | | | |
| Profit on one acre of land for six years | 1 | 9 | 3 | | | | |

| <i>And a course of crops on the same land for six years under the new system of husbandry, is thus stated:</i> | | | | <i>Third Year, Peas.</i> | | | |
|--|----|----|----|-------------------------------------|---|---|----------|
| | £. | s. | d. | | | | £. s. d. |
| 1st year, turnip fallow, | | | | Ploughing harrowing, and raking | - | - | 0 7 6 |
| 2d year, barley, | | | | Ditto, a second time | - | - | 0 7 6 |
| 3d year, pea fallow, | | | | Making drills | - | - | 0 2 6 |
| 4th year, wheat or oats, | | | | Manure, four loads, at 8s. per load | - | - | 1 12 0 |
| 5th year, clover, | | | | Bush-harrowing | - | - | 0 0 3 |
| 6th year wheat, | | | | Seed, four bushels | - | - | 0 16 0 |
| | | | | Three times ploughing | - | - | 0 4 6 |
| | | | | Reaping and threshing | - | - | 0 12 0 |
| | | | | Rent and assessments | - | - | 1 5 0 |
| | | | | Tithe | - | - | 0 6 0 |
| | | | | | | | 5 13 3 |

New System of Husbandry.

| <i>Dr. to Expenses.</i> | | | | <i>Cr. by Produce.</i> | | | |
|-----------------------------|----|----|----|---|---|---|----------|
| <i>First Year, Turnips.</i> | | | | <i>Four quarters of peas, at 1l. 12s. per quarter</i> | | | |
| | £. | s. | d. | | | | £. s. d. |
| Ploughing 1½ inch deep | 0 | 4 | 0 | Four quarters of peas, at 1l. 12s. per quarter | 6 | 8 | 0 |
| Harrowing and raking | 0 | 3 | 6 | Straw | 1 | 0 | 0 |
| Carry over | 0 | 7 | 6 | | 7 | 8 | 0 |

HUSBANDRY.

Dr. to Expences.

Fourth Year, Wheat.

| | £. | s. | d. |
|---------------------------|----|----|----|
| Scarifying and harrowing | 0 | 3 | 0 |
| Ploughing and sowing | 0 | 5 | 0 |
| Seed wheat, three bushels | 0 | 18 | 9 |
| Rent and assessments | 1 | 5 | 0 |
| Tithe | 0 | 6 | 0 |
| Reaping and threshing | 0 | 15 | 0 |
| Clover-feed, 20lb. | 0 | 10 | 0 |
| | 4 | 2 | 9 |

Cr. by Produce.

| | £. | s. | d. |
|---|----|----|----|
| Three quarters of wheat at 2l. 10s. per quarter | 7 | 10 | 0 |
| Straw | 1 | 0 | 0 |
| | 8 | 10 | 0 |

Dr. to Expences.

Fifth Year, Clover.

| | £. | s. | d. |
|---------------------------------------|----|----|----|
| Mowing and reaping | 0 | 5 | 0 |
| Rent and assessments | 1 | 5 | 0 |
| Tithe | 0 | 6 | 0 |
| Four loads of manure, at 8s. per load | 1 | 12 | 0 |
| | 3 | 8 | 0 |

Cr. by Produce.

| | £. | s. | d. |
|------------------------------|----|----|----|
| One and a half ton of clover | 6 | 0 | 0 |

Dr. to Expences.

Sixth Year, Wheat.

| | £. | s. | d. |
|-----------------------|----|----|----|
| Ploughing and sowing | 0 | 6 | 6 |
| Seed, three bushels | 0 | 18 | 9 |
| Reaping and threshing | 0 | 17 | 0 |
| Rent and assessments | 1 | 5 | 0 |
| Tithe | 0 | 6 | 0 |
| | 3 | 13 | 3 |

Cr. by Produce.

| | £. | s. | d. |
|---|----|----|----|
| Four quarters of wheat, at 2l. 10s. per quarter | 10 | 0 | 0 |
| Straw | 1 | 0 | 0 |
| | 11 | 0 | 0 |
| Total of the produce | 42 | 18 | 0 |
| Total of the expence | 25 | 11 | 3 |
| Profit of one acre of land for six years | 17 | 6 | 9 |

On these data it is concluded that under the old plan of management, the farmer obtains only 1l. 9s. 3d. profit per

acre from his land in six years, or 4s. 10½d. per acre per annum. And the expence of labour is said to be stated higher than it really is, or he could not support his family and pay his rent: while under the improved husbandry, in the same length of time, the profit is 17l. 6s. 9d. which is 2l. 17s. 9½d. per acre per annum, or more than 100 per cent. in its favour.

It is stated, that in this farm there is an open pasture, that is let at 2s. 6d. the acre, and the tenants consider it of no use to them: but under proper management, it is supposed, that 5l. per acre of profit might be annually derived from it. Of course, the tenant may well be surpris'd at being charged a new rent of 1l. 8s. the acre, though he now pays only 15s. and is supposed highly rented according to his plan of management.

It is estimated, that the loss sustained at this rate on two thousand acres, is 29,625l. in six years. If that number of acres were let at 1l. 8s. the acre yearly, there would be an advance of 13s. the acre, which would raise the sum of 7000l. more for the tenants to pay in six years. And that sum taken from 29,625l. would still leave them a profit of 21,825l.

Though these estimates may appear extraordinary to those not conversant with the business, they are founded in truth; and by pursuing proper courses, such profits as have been stated may be afforded to the landlord, as well as the tenant, independent of the benefit of green food during the summer. By a superiority of management in this way, the farmers in East Lothian are enabled to pay three or four pounds the acre. And if a person who lives by garden culture were to dig his ground one year in three, and that year raise no crop, he would be supposed a madman. Yet the two crops and a fallow are worse, as the land in this way is robbed of one-third of its manure. This may, indeed, be supposed to open the eyes of the landlord, but it is also much to the benefit of the tenant.

These facts and statements fully display the vast benefits and improvements that are capable of being derived from the adoption of improved modes of husbandry in all cases where they can be admitted; though such detailed statements must necessarily have regard, in some degree, to the peculiar situations and other circumstances of the farms and lands.

A Farm conducted under different Modes of Husbandry.

In the view of displaying more fully the benefits of different modes of managing land, comparative statements of the profits resulting from a farm of four hundred acres employed under different modes of husbandry, in different circumstances, are given:

- 1st. *In the grazing system.*
- 2d. *— the dairy practice.*
- 3d. *— the hay-felling custom.*
- 4th. *— the tillage plan, near a large town.*
- 5th. *— the tillage plan more distantly situated.*
- 6th. *— the tillage plan with improved course of crops.*

Having noticed, that it is not rent that causes the poverty or riches of the farmer, but the difference in his mode of managing it, or the method of husbandry pursued, as a good plan of management improves land, especially under tillage in the most expeditious way of any; some estimates are given which clearly point out the great superiority of the tillage plan over any other that is had recourse to on the same ground in the way of a farm. In this case the rent is 50s. the acre, and the land sufficiently rich for affording profitable crops under judicious management.

HUSBANDRY.

I. Under the grazing System of Husbandry.

The extent of grazing land in this case is stated to be 300 acres, seventy in meadow, and thirty in tillage. The live stock on 200 acres, 150 oxen, bought in at 25*l.* per head, and fold off at 30*l.* each: and on the remaining 100 acres, 75 cows at 17*l.* each, 4 milch cows; 300 ewes bought in at 45*s.* each, and fold off at 70*s.* to breed lambs for market; and 3 tups, at 5*l.* each. The lambs produced 400, fold at 35*s.* each; the wool of the ewes 5*lb.* each fleece, and fold at 40*s.* the tod. Eight horses and six pigs. These are thus stated:

Expences of stock, &c. (Account 1.)

| | £. | s. | d. |
|---|------|----|----|
| Purchase of 150 oxen, at 25 <i>l.</i> each | 3750 | 0 | 0 |
| Seventy-five cows, at 17 <i>l.</i> | 1275 | 0 | 0 |
| Three hundred ewes, at 45 <i>s.</i> | 675 | 0 | 0 |
| | | | |
| Four milch cows, at 20 <i>l.</i> | 80 | 0 | 0 |
| Eight horses, at 30 <i>l.</i> | 240 | 0 | 0 |
| Three rams, at 5 <i>l.</i> | 15 | 0 | 0 |
| Six pigs, at 30 <i>s.</i> | 9 | 0 | 0 |
| Two waggons, at 30 <i>l.</i> | 60 | 0 | 0 |
| Two carts, at 17 <i>l.</i> | 34 | 0 | 0 |
| Two ploughs, at 5 <i>l.</i> 5 <i>s.</i> | 10 | 10 | 0 |
| Two pair of harrows | 13 | 2 | 6 |
| A scarifier | 15 | 15 | 0 |
| A roller | 5 | 5 | 0 |
| A wheelbarrow | 1 | 1 | 0 |
| A machine to dress corn | 13 | 13 | 0 |
| Shovels, spades, forks, scuttles, measures, &c. | 10 | 10 | 0 |
| Household furniture | 200 | 0 | 0 |
| | | | |
| | 6407 | 16 | 6 |

Stock. (Account 2.)

Expences.

| | £. | s. | d. |
|--|------|----|----|
| Purchase of stock, as in the first part of account 1. | 5700 | 0 | 0 |
| Twenty oxen to eddish, and the hay in the winter, at 25 <i>l.</i> each | 500 | 0 | 0 |
| Two servant-men and a boy | 28 | 0 | 0 |
| Two servant-girls | 12 | 0 | 0 |
| Housekeeping | 200 | 0 | 0 |
| Clothing for the family | 50 | 0 | 0 |
| Harvesting 70 acres of hay, at 10 <i>s.</i> | 35 | 0 | 0 |
| Clipping the sheep and fundries | 5 | 0 | 0 |
| Mowing and grubbing thistles on grazing land, at 6 <i>d.</i> an acre | 7 | 10 | 0 |
| Harness for 8 horses, at 3 <i>l.</i> each | 24 | 0 | 0 |
| The farmer's expences in doing the business | 70 | 0 | 0 |
| | | | |
| | 6631 | 10 | 0 |

Returns.

| | £. | s. | d. |
|--|------|----|----|
| Sale of 150 oxen, at 30 <i>l.</i> each | 4500 | 0 | 0 |
| of 75 cows, at 21 <i>l.</i> each | 1575 | 0 | 0 |
| of 300 ewes, at 70 <i>s.</i> | 1050 | 0 | 0 |
| | | | |
| Carry over | 7125 | 0 | 0 |

| | £. | s. | d. |
|---|------|----|----|
| Brought over | 7125 | 0 | 0 |
| Sale of 53½ tods of wool, at 40 <i>s.</i> | 214 | 0 | 0 |
| of 400 lambs, at 35 <i>s.</i> | 140 | 0 | 0 |
| of 4 calves, at 5 <i>l.</i> | 20 | 0 | 0 |
| of 20 oxen, at 34 <i>l.</i> | 680 | 0 | 0 |
| Profit on a horse | 5 | 0 | 0 |
| on 6 pigs | 6 | 0 | 0 |
| on sale of a cow and a calf | 3 | 0 | 0 |
| | | | |
| Total | 8646 | 0 | 0 |
| Expence | 6631 | 10 | 0 |
| | | | |
| Profit | 2014 | 10 | 0 |

Tillage Part. (Account 3.)

Expences.

Wheat, Ten Acres.

| | £. | s. | d. |
|---|----|----|----|
| Ploughing three times for fallow, at 17 <i>s.</i> an acre each time | 25 | 10 | 0 |
| Seed ploughing, at 17 <i>s.</i> an acre | 8 | 10 | 0 |
| Seed, 3 bushels an acre, at 9 <i>s.</i> 6 <i>d.</i> each | 14 | 5 | 0 |
| Weeding, at 6 <i>d.</i> an acre | 0 | 5 | 0 |
| Harvesting, at 18 <i>s.</i> an acre | 9 | 0 | 0 |
| Threshing, 3 quarters an acre, at 2 <i>s.</i> 6 <i>d.</i> per quarter | 3 | 15 | 0 |
| | | | |
| | 61 | 5 | 0 |

Returns.

| | £. | s. | d. |
|---|-----|----|----|
| Thirty quarters of wheat, at 3 <i>l.</i> 16 <i>s.</i> per quarter | 114 | 0 | 0 |
| | | | |
| Total | 114 | 0 | 0 |
| Expences | 61 | 5 | 0 |
| | | | |
| Profit | 52 | 15 | 0 |

Beans, Ten Acres.

| | £. | s. | d. |
|--|----|----|----|
| Ploughing, at 17 <i>s.</i> an acre | 8 | 10 | 0 |
| Seed, 3 bushels an acre, at 4 <i>s.</i> 4½ <i>d.</i> each | 6 | 11 | 3 |
| Hoeing, at 6 <i>s.</i> an acre | 3 | 0 | 0 |
| Harvesting, at 14 <i>s.</i> an acre | 7 | 0 | 0 |
| Threshing 3 quarters an acre, at 1 <i>s.</i> 6 <i>d.</i> a quarter | 2 | 5 | 0 |
| | | | |
| | 27 | 6 | 3 |

Returns.

| | £. | s. | d. |
|---|----|----|----|
| Thirty quarters of beans, at 35 <i>s.</i> per quarter | 52 | 10 | 0 |
| | | | |
| Total | 52 | 10 | 0 |
| Expences | 27 | 6 | 3 |
| | | | |
| Profit | 25 | 3 | 9 |

Total Profit on the two crops 77 18 9

The expence of three times ploughing the ten acres that were *summer-fallowed* for wheat, is charged in the wheat-crop.

(Account

HUSBANDRY.

(Account 4.)

Expences of the Land, &c.

| | £. | s. | d. |
|--|-------------|-----------|----------|
| Rent, 400 acres, at 50s. | 1000 | 0 | 0 |
| Assessments, at 6s. in the pound | 300 | 0 | 0 |
| Taxes | 150 | 0 | 0 |
| Interest of capital laid out in buying stock, &c. as in account above, 6407l. 6s. 6d. at 8 per cent. | 312 | 12 | 0 |
| Total | 1962 | 11 | 8 |

Returns.

| | | | |
|--|-------------|-----------|----------|
| Profit on grazing 370 acres, as by account 2 | 2014 | 10 | 0 |
| Arable, 30 acres as by account 3 | 77 | 18 | 9 |
| Total | 2092 | 8 | 9 |
| Expences | 1962 | 11 | 8 |
| Total Profit | 129 | 17 | 1 |

II. Under the Dairy Practice.

In this case the farm is supposed to be principally in the state of grass, and employed in dairying; in which there are 220 acres in pasture, 150 in meadow, and 30 in tillage. The cow stock allowing $1\frac{1}{2}$ acre to each, will be 140; with a bull or two, and six horses. The profit on cows, in calves, butter, and milk for the use of the hogs, 15l. each. The sheep stock, one ewe to the acre, on the pasture land, is 200 ewes bought in to breed lambs; the ewes and lambs to be made fat, and sold off, fresh stock being purchased annually; the produce in lambs will be 250, selling at 35s. each; and the ewes will cost 45s. each, which, when fat, will sell for 70s. each; their wool, at 5lb. each fleece, will make 35 tods of 20lb., selling at 40s. the tod. The cows, if bought in at three years old, will cost 17l. each, and after having three calves, sell for 20l. each: consequently in this way, there will be about thirty-five cows to be changed annually. One horse will also be to be sold yearly, and one bought in. The tillage part, the same as in the grazing farm; 10 acres of wheat, 10 acres of beans, and 10 acres in summer fallow. The whole of the statement is thus made out.

Expences of Stock, &c. (Account 5.)

| | £. | s. | d. |
|--|-------------|-----------|----------|
| Purchase of 200 ewes, at 45s. | 450 | 0 | 0 |
| Two rams, at 5l. | 10 | 0 | 0 |
| 460 | 0 | 0 | 0 |
| One hundred and forty cows, at 17l. each | 2380 | 0 | 0 |
| Two Bulls, at 10l. | 20 | 0 | 0 |
| Six Horses, at 30l. | 180 | 0 | 0 |
| Two Waggon, at 30l. | 60 | 0 | 0 |
| Two Carts, at 17l. | 34 | 0 | 0 |
| Two Ploughs, at 5l. 5s. | 10 | 10 | 0 |
| Two Pair of harrows | 13 | 2 | 6 |
| A scarifier | 15 | 15 | 0 |
| A roller | 5 | 5 | 0 |
| Carry over | 3178 | 12 | 6 |

| | £. | s. | d. |
|---|-------------|----------|----------|
| Brought over | 3178 | 12 | 6 |
| A wheelbarrow | - | - | 1 1 0 |
| A machine for dressing corn | - | - | 15 15 0 |
| Spades, shovels, forks, scuttles, meafures, &c. | - | - | 10 0 0 |
| Household furniture | - | - | 200 0 0 |
| Churns, leads, milk-pails, &c. | - | - | 100 0 0 |
| Harnes for horses, at 3l. each | - | - | 18 0 0 |
| Total | 3523 | 8 | 6 |

Dairying and Stock. (Account 6.)

Expences.

| | £. | s. | d. |
|--|-------------|-----------|----------|
| Purchase of stock, as in first part of account 1 | 460 | 0 | 0 |
| Twenty milkers, at 10s. a week each | 520 | 0 | 0 |
| Wages of four dairy-maids | 36 | 0 | 0 |
| Housekeeping | 300 | 0 | 0 |
| Clothing for the family | 50 | 0 | 0 |
| Clipping the sheep and fundries | 3 | 10 | 0 |
| Mowing and grubbing the thistles on the pasture land, at 6d. an acre | 5 | 10 | 0 |
| Two servants to do the farming business | 18 | 18 | 0 |
| The farmer's expences in doing the business | 50 | 0 | 0 |
| Harvelting 150 acres of hay, at 10s. an acre | 75 | 0 | 0 |
| Total | 1518 | 18 | 0 |

Returns.

| | £. | s. | d. |
|--|-------------|-----------|----------|
| The produce from 140 cows, at 15l. from each | 2100 | 0 | 0 |
| Wool, 35 tods and 20lb. at 40s. a tod | 71 | 8 | 7 |
| Two hundred and fifty lambs, at 35s. each | 437 | 10 | 0 |
| Two hundred ewes, at 70s. | 700 | 0 | 0 |
| Profit each year on selling 35 cows, at 3l. | 105 | 0 | 0 |
| Total | 3413 | 18 | 7 |
| Expence | 1518 | 18 | 0 |
| Profit | 1895 | 0 | 7 |

(Account 7.)

Expences of the Land, &c.

| | £. | s. | d. |
|--|-------------|-----------|----------|
| Rent of 400 acres; at 50s. an acre | 1000 | 0 | 0 |
| Assessments, at 6s. in the pound | 300 | 0 | 0 |
| Taxes, according to the stock | 100 | 0 | 0 |
| Interest of capital laid out in buying stock, &c. as in account 1. 3523l. 8s. 6d. at 8 per cent. | 281 | 17 | 6 |
| Total | 1681 | 17 | 6 |

Returns.

| | £. | s. | d. |
|------------------------|-------------|-----------|-----------|
| Profit on dairying | 1895 | 0 | 7 |
| Profit on tillage-land | 77 | 18 | 9 |
| Total | 1972 | 19 | 4 |
| Expence | 1681 | 17 | 6 |
| Total Profit | 291 | 1 | 10 |

III. Under

HUSBANDRY.

III. Under the Hay-selling Custom.

The farm is here all in the state of meadow, with the exception of twenty acres in pasture, and thirty in tillage. The stock consists of four cows, twelve horses, and six pigs.

Expences of Stock, &c. (Account 8.)

| | £. | s. | d. |
|--|-----|----|----|
| Purchase of 12 horses, at 20 <i>l.</i> each | 240 | 0 | 0 |
| Four Cows, at 20 <i>l.</i> | 80 | 0 | 0 |
| Six Pigs, at 20 <i>s.</i> | 6 | 0 | 0 |
| Three Waggon, at 30 <i>l.</i> | 90 | 0 | 0 |
| Three Carts, at 17 <i>l.</i> | 51 | 0 | 0 |
| Two Ploughs, at 5 <i>l.</i> 5 <i>s.</i> | 10 | 10 | 0 |
| Two Pair of harrows | 13 | 2 | 6 |
| A scarifier | 15 | 15 | 0 |
| A roller | 5 | 5 | 0 |
| A wheelbarrow | 1 | 1 | 0 |
| A machine for dressing corn | 15 | 15 | 0 |
| Spades, shovels, forks, scuttles, meaures, &c. | 10 | 0 | 0 |
| Harnes for horses, at 3 <i>l.</i> each | 36 | 0 | 0 |
| Household furniture | 200 | 0 | 0 |
| Total | 774 | 8 | 6 |

(Account 9.)

Expences on Land and Stock.

| | £. | s. | d. |
|---|------|----|----|
| Harvesting hay, 350 acres, at 20 <i>s.</i> each | 350 | 0 | 0 |
| Preparing hay for the market | 78 | 15 | 0 |
| Three carters to drive the hay to market, at 20 <i>s.</i> a week each | 156 | 0 | 0 |
| Three servant-boys, at 7 <i>l.</i> 7 <i>s.</i> a year each | 22 | 1 | 0 |
| Turnpikes during the year | 45 | 15 | 0 |
| A servant-girl | 6 | 0 | 0 |
| Expences on the tillage-land, as in account 3, 6 <i>l.</i> 5 <i>s.</i> and 27 <i>l.</i> 6 <i>s.</i> 3 <i>d.</i> | 88 | 11 | 3 |
| Rent, the same as before | 1000 | 0 | 0 |
| Assessments, at 6 <i>s.</i> in the pound | 300 | 0 | 0 |
| Taxes | 50 | 0 | 0 |
| Interest of capital laid out in buying stock, &c. as in account 8, 774 <i>l.</i> 8 <i>s.</i> at 8 per cent | 61 | 19 | 0 |
| Eight hundred loads of dung, at 2 <i>s.</i> a load | 80 | 0 | 0 |
| Total | 2239 | 1 | 3 |

Returns.

| | £. | s. | d. |
|--|------|----|----|
| Seven hundred loads of hay (a proportion of two loads an acre), at 65 <i>s.</i> a load | 2275 | 0 | 0 |
| After-crop of grafs, at 20 <i>s.</i> an acre | 350 | 0 | 0 |
| Profit on four cows | 20 | 0 | 0 |
| Ditto on the tillage-land | 77 | 18 | 0 |
| Wheat-straw on ten acres, five loads an acre, at 45 <i>s.</i> per load | 112 | 10 | 0 |
| Total | 2835 | 8 | 9 |
| Expence | 2239 | 1 | 3 |
| Profit | 596 | 7 | 6 |

IV. Under Tillage near a large Town.

The farm in this instance consists of 264 acres of land in tillage, thirty-six in meadow, and the remainder in grazing ground. The stock is supposed to be 12 horses for market work, and six for the purposes of tillage. The 100 acres of

grazing land being stocked with oxen, at the rate of three to four acres; also six milch cows; and 100 ewes, one to the acre, to produce lambs; the produce about 125 lambs; consequently fresh stock will be yearly wanted. The oxen should be bought in, in the spring season at about 25*l.* a piece, being fold off at about 30*l.* The lambs, when fattened, will fetch about 35*s.* each. The ewes are purchased in at about 45*s.* each; and disposed of at about 75*s.* each, being fattened on rape or turnips, sown on the land from which the garden peas had been taken. And the hay from the thirty-six acres of meadow land can, it is supposed, from the situation of the farm, be sent to market with more profit than by consuming it; there being two loads to the acre; the eddish being eaten off by oxen and sheep stock.

Expences of Stock, &c. (Account 1.)

| | £. | s. | d. |
|--|------|----|----|
| Purchase of 70 oxen, at 25 <i>l.</i> each | 1750 | 0 | 0 |
| One hundred ewes, at 45 <i>s.</i> | 225 | 0 | 0 |
| Total | 1975 | 0 | 0 |
| Twelve Horses, at 25 <i>l.</i> | 300 | 0 | 0 |
| Six ditto, at 15 <i>l.</i> | 90 | 0 | 0 |
| Six Cows, at 20 <i>l.</i> | 120 | 0 | 0 |
| A ram | 5 | 0 | 0 |
| Eight Pigs, at 30 <i>s.</i> | 12 | 0 | 0 |
| Three Waggon, at 30 <i>l.</i> | 90 | 0 | 0 |
| Three Carts, at 17 <i>l.</i> | 51 | 0 | 0 |
| Three Ploughs, at 5 <i>l.</i> 5 <i>s.</i> | 15 | 15 | 0 |
| Four Pair of harrows | 26 | 5 | 0 |
| A scarifier | 15 | 15 | 0 |
| A roller | 5 | 5 | 0 |
| Two Wheelbarrows | 2 | 2 | 0 |
| A machine for dressing corn | 15 | 15 | 0 |
| Spades, shovels, forks, scuttles, meaures, &c. | 10 | 0 | 0 |
| Harnes for horses, at 3 <i>l.</i> each | 54 | 0 | 0 |
| Household furniture | 200 | 0 | 0 |
| Total | 2987 | 17 | 0 |

Stock. (Account 2.)

Expences.

| | £. | s. | d. |
|---|------|----|----|
| Purchase of flock, as in the first part of account 1 | 1975 | 0 | 0 |
| — of ten oxen to eat eddish in the autumn, at 25 <i>l.</i> each | 250 | 0 | 0 |
| Wages of four men-servants | 40 | 0 | 0 |
| — of two servant-girls | 12 | 0 | 0 |
| Clipping the sheep and sundries | 2 | 0 | 0 |
| Mowing and grubbing thistles on the grazing land, at 6 <i>d.</i> per acre | 2 | 10 | 0 |
| Housekeeping | 300 | 0 | 0 |
| Clothing for family | 50 | 0 | 0 |
| The farmer's expences in doing the business | 70 | 0 | 0 |
| Harvesting thirty-six acres of hay, at 10 <i>s.</i> an acre | 18 | 0 | 0 |
| Total | 2719 | 10 | 0 |

Returns.

| | £. | s. | d. |
|--|------|----|----|
| Sale of seventy oxen, at 30 <i>l.</i> each | 2100 | 0 | 0 |
| — of 100 ewes, at 75 <i>s.</i> | 375 | 0 | 0 |
| Carry over | 2475 | 0 | 0 |
| Sale | | | |

HUSBANDRY.

| | £. | s. | d. | | £. | s. | d. |
|--------------------------------------|------|-----|----|---|----|----|----|
| Brought over | 2475 | 0 | 0 | Brought over | 2 | 0 | 0 |
| Sale of wool, 17 tods, at 40s. a tod | - | 34 | 0 | Ploughing, at 10s. 6d. an acre | - | 4 | 4 |
| — of 125 lambs, at 35s. each | - | 218 | 15 | Seed, 6lb. an acre, at 9d. a pound | - | 1 | 16 |
| — of ten oxen, at 30l. | - | 300 | 0 | Harvesting, at 1s. 6d. per acre | - | 0 | 12 |
| Profit on a cow and calf fold | - | 3 | 0 | Harrowing, when growing, at 1s. an acre | - | 0 | 8 |
| — on six cows | - | 30 | 0 | Hoeing, at 6s. an acre | - | 2 | 8 |
| | | | | Rent of these eight acres | - | 20 | 0 |
| | | | | Assessments, at 6s. in the pound | - | 6 | 0 |
| Total | 3060 | 15 | 0 | | | | |
| Expence | 2719 | 10 | 0 | | | | |
| | | | | | | | |
| Profit | 341 | 5 | 0 | | | | |

The expences of making the hay are noticed to be estimated at 10s. the acre only, as the quantity being only 36 acres, it may be done wholly by the farmer's family; but where the business is hired, 20s. are as little as can be charged.

That part of the farm which is under tillage may be managed in such a mode of cropping, as to produce 14 crops in the course of 11 years, somewhat in this way:—

Courses of Crops.

- 1st. Year, Potatoes manured for with 12 loads of dung per acre.
- 2d. — Wheat, limed with 30 bushels, mixed with earth, per acre.
- 3d. — Flax; rape being sown after it is off, for seed.
- 4th. — Rape for a crop, straw burnt after it is taken off, for wheat.
- 5th. — Wheat.
- 6th. — Garden peas drilled, and manured with four loads of dung per acre, and turnips afterwards; eight loads of dung per acre broad-cast, and drilled.
- 7th. — Barley sown with clover.
- 8th. — Clover, manured with six loads of compost per acre.
- 9th. — Wheat; limed with 30 bushels, mixed with earth, per acre.
- 10th. — Beans, manured with 12 loads of dung per acre, and hoed.
- 11th. — Oats.

(Account 3.)

Dr. to Expences.

Vetches, Eight Acres.

| | | | | |
|--|---|----|----|---|
| Ploughing, at 10s. 6d. per acre | - | 4 | 4 | 0 |
| Seed, four bushels an acre, at 10s. a bushel | - | 16 | 0 | 0 |
| Harrowing, at 1s. 6d. an acre | - | 0 | 12 | 0 |
| Manure, 12 loads an acre, at 10s. a load | - | 48 | 0 | 0 |
| | | 68 | 16 | 0 |

Cr. by Produce.

| | | | | |
|---------------------|---|----|---|---|
| Crop at 7l. an acre | - | 56 | 0 | 0 |
|---------------------|---|----|---|---|

Dr. to Expences.

Turnips, Eight Acres, the same Land.

| | | | | |
|--|---|---|---|---|
| Scarifying, harrowing, and gathering refuse ituff, at 5s. an acre | - | 2 | 0 | 0 |
| | | 2 | 0 | 0 |
| Carry over | | 2 | 0 | 0 |

Cr. by Produce.

| | | | | |
|----------------------|---|----|---|---|
| Crop, at 5l. an acre | - | 40 | 0 | 0 |
|----------------------|---|----|---|---|

Dr. to Expences.

Potatoes, Sixteen Acres.

| | £. | s. | d. |
|---|----|-----|----|
| Ploughing twice, at 10s. 6d. an acre each time | 16 | 16 | 0 |
| Scarifying, harrowing, and gathering refuse ituff, &c. at 5s. an acre | - | 4 | 0 |
| Manure, 12 loads an acre, at 10s. per load | - | 96 | 0 |
| Seed, 36 bushels an acre, at 1s. 6d. a bushel | - | 43 | 0 |
| Ploughing for planting, at 10s. 6d. an acre | - | 8 | 8 |
| Harrowing, when the crop comes up, at 1s. an acre | - | 0 | 16 |
| Hoeing, at 6s. an acre | - | 4 | 16 |
| Ploughing up the crop, sowing wheat, and ga- thering the potatoes, at 50s. an acre | - | 40 | 0 |
| Rent | - | 40 | 0 |
| Assessments, at 6s. in the pound | - | 12 | 0 |
| | | 265 | 16 |

Cr. by Produce.

| | | | | |
|--|---|-----|---|---|
| Crop, 450 bushels an acre, at 1s. 6d. a bushel | - | 540 | 0 | 0 |
|--|---|-----|---|---|

Dr. to Expences.

Wheat, Twenty-four Acres.

| | £. | s. | d. |
|---|----|-----|----|
| Seed, 3½ bushels an acre, at 9s. 6d. a bushel | - | 39 | 0 |
| Harrowing, at 1s. 6d. an acre | - | 1 | 16 |
| Lime, 30 bushels an acre, bought at 4d. a bushel, mixing with earth, leading, &c. at 4d. a bushel | - | 24 | 0 |
| Bush-harrowing, and rolling, at 2s. 6d. an acre | - | 3 | 0 |
| Weeding, at 6s. an acre | - | 0 | 12 |
| Harvesting, at 18s. an acre | - | 21 | 12 |
| Threshing five quarters an acre, and tying the straw up, at 3s. a quarter | - | 18 | 0 |
| Rent | - | 60 | 0 |
| Assessments, at 6s. in the pound | - | 18 | 0 |
| | | 186 | 0 |

Cr. by Produce.

| | £. | s. | d. |
|--|----|-----|----|
| Crop, five quarters an acre, at 76s. a quarter | - | 456 | 0 |
| Straw, five loads an acre, at 45s. a load | - | 270 | 0 |
| | | 726 | 0 |

Dr.

HUSBANDRY.

Dr. to Expenses.

Flax, Twenty-four Acres.

| | £. | s. | d. |
|---|-----|----|----|
| Ploughing, at 10s. 6d. an acre | 12 | 12 | 0 |
| Seed, two bushels an acre, at 12s. 6d. a bushel | 30 | 0 | 0 |
| Harrowing and rolling, at 2s. 6d. an acre | 3 | 0 | 0 |
| Weeding, at 2s. an acre | 2 | 8 | 0 |
| Pulling, at 10s. 6d. an acre | 12 | 12 | 0 |
| Watering | 12 | 0 | 0 |
| Laying on the ledge, and taking up | 12 | 0 | 0 |
| Beetling | 20 | 0 | 0 |
| Scutching twice, 1028 stone, at 2s. a stone | 102 | 16 | 0 |
| Hackling ditto, at 3s. 6d. a stone | 179 | 18 | 0 |
| | 387 | 6 | 0 |

Cr. by Produce.

| | | | |
|---|-----|----|---|
| Crop, 1028 stone of flax, at 14s. a stone | 719 | 12 | 0 |
| | 719 | 12 | 0 |

Dr. to Expenses.

Rape for Seed, Twenty-four Acres, the same Land.

| | £. | s. | d. |
|---|-----|----|----|
| Ploughing, at 10s. 6d. an acre | 12 | 12 | 0 |
| Seed, half a peck an acre, at 1s. 3d. a half-peck | 1 | 10 | 0 |
| Harrowing, at 1s. 6d. an acre | 1 | 16 | 0 |
| Harvesting, threshing, &c. at 25s. an acre | 30 | 0 | 0 |
| Rent | 60 | 0 | 0 |
| Assessments, at 6s. in the pound | 18 | 0 | 0 |
| | 123 | 18 | 0 |

Cr. by Produce.

| | | | |
|---|-----|---|---|
| Crop, five quarters of seed an acre, at 4l. a quarter | 480 | 0 | 0 |
| | 480 | 0 | 0 |

Dr. to Expenses.

Wheat, Twenty-four Acres.

| | £. | s. | d. |
|--|-----|----|----|
| Burning rape-straw, at 20s. an acre | 24 | 0 | 0 |
| Ploughing, at 10s. 6d. an acre | 12 | 12 | 0 |
| Seed 3½ bushels an acre, at 9s. 6d. a bushel | 39 | 18 | 0 |
| Harrowing, at 1s. 6d. an acre | 1 | 16 | 0 |
| Bush-harrowing and rolling, at 2s. 6d. an acre | 3 | 0 | 0 |
| Weeding, at 6d. an acre | 0 | 12 | 0 |
| Harvesting, at 18s. an acre | 21 | 12 | 0 |
| Threshing, five quarters an acre, and tying the straw up, at 3s. a quarter | 18 | 0 | 0 |
| Rent | 60 | 0 | 0 |
| Assessments, at 6s. in the pound | 18 | 0 | 0 |
| | 199 | 10 | 0 |

Cr. by Produce.

| | | | |
|--|-----|---|---|
| Crop, five quarters an acre, at 76s. a quarter | 456 | 0 | 0 |
| Straw, five loads an acre, at 45s. a load | 270 | 0 | 0 |
| | 726 | 0 | 0 |

Dr. to Expenses.

Garden Peas, Twenty-four Acres.

| | £. | s. | d. |
|--|-----|----|----|
| Making drills, at 10s. 6d. an acre | 12 | 12 | 0 |
| Manure, four loads an acre, at 10s. per load | 48 | 0 | 0 |
| Seed, three bushels an acre, at 10s. a bushel | 36 | 0 | 0 |
| Earthing, three times, at 2s. 6d. an acre each time | 9 | 0 | 0 |
| Roguing, at 1s. an acre | 1 | 4 | 0 |
| Reaping, at 12s. an acre | 14 | 8 | 0 |
| Threshing, five quarters an acre, at 1s. 3d. a quarter | 7 | 10 | 0 |
| | 128 | 14 | 0 |

Cr. by Produce.

| | | | |
|---|-----|---|---|
| Crop, five quarters an acre, at 4l. a quarter | 480 | 0 | 0 |
| Straw, five loads an acre, at 30s. a load | 180 | 0 | 0 |
| | 660 | 0 | 0 |

Dr. to Expenses.

Turnips, Twenty-four Acres, same Land.

| | £. | s. | d. |
|--|-----|----|----|
| Scarifying, harrowing, and preparing the land for the crop, at 5s. an acre | 6 | 0 | 0 |
| Ploughing and harrowing, at 12s. an acre | 14 | 8 | 0 |
| Seed, 6lb. an acre, at 9d. a pound | 5 | 8 | 0 |
| Harrowing the crop when growing, at 1s. an acre | 7 | 4 | 0 |
| Rent | 60 | 0 | 0 |
| Assessments, at 6s. in the pound | 18 | 0 | 0 |
| | 152 | 0 | 0 |

Cr. by Produce.

| | | | |
|----------------------|-----|---|---|
| Crop, at 5l. an acre | 120 | 0 | 0 |
| | 120 | 0 | 0 |

Dr. to Expenses.

Barley, Twenty-four Acres.

| | £. | s. | d. |
|--|-----|----|----|
| Ploughing, at 10s. 6d. an acre | 12 | 12 | 0 |
| Seed, four bushels and a half an acre, at 4s. a bushel | 21 | 12 | 0 |
| Harrowing, at 1s. 6d. an acre | 1 | 16 | 0 |
| Clover-feed, 20lb. an acre, at 8d. a pound | 16 | 0 | 0 |
| Bush-harrowing and rolling, at 2s. 6d. an acre | 3 | 0 | 0 |
| Weeding, at 6d. an acre | 0 | 12 | 0 |
| Harvesting, at 12s. an acre | 14 | 8 | 0 |
| Threshing six quarters an acre, and tying the straw up, at 2s. 6d. a quarter | 18 | 0 | 0 |
| Rent | 60 | 0 | 0 |
| Assessments, at 6s. in the pound | 18 | 0 | 0 |
| | 166 | 0 | 0 |

Cr. by Produce.

| | | | |
|---|-----|---|---|
| Crop, six quarters an acre, at 32s. per quarter | 230 | 0 | 0 |
| Straw, five loads an acre, at 30s. a load | 180 | 0 | 0 |
| | 410 | 0 | 0 |

HUSBANDRY.

Dr. to Expenses.

Clover, Twenty-four Acres.

| | £. | s. | d. |
|--|-----|----|----|
| Manure, six loads an acre, at 10s. a load | 72 | 0 | 0 |
| Mowing twice, at 2s. 3d. an acre each time | 5 | 8 | 0 |
| Harvesting, at 3s. 6d. an acre | 4 | 4 | 0 |
| Rent | 60 | 0 | 0 |
| Affessments, at 6s. in the pound | 18 | 0 | 0 |
| | 159 | 12 | 0 |

Cr. by Produce.

| | | | |
|--|-----|---|---|
| Crop, 3½ loads of hay an acre, at 5l. a load | 420 | 0 | 0 |
| | 420 | 0 | 0 |

Dr. to Expenses.

Wheat, Twenty-four Acres.

| | £. | s. | d. |
|--|-----|----|----|
| Ploughing, at 10s. 6d. an acre | 12 | 12 | 0 |
| Seed, 3½ bushels an acre, at 9s. 6d. a bushel | 39 | 18 | 0 |
| Harrowing, at 1s. 6d. an acre | 1 | 16 | 0 |
| Lime, 50 bushels an acre, bought at 4d. a bushel, mixing earth, leading, &c. at 4d. a bushel | 24 | 0 | 0 |
| Bush-harrowing and rolling, at 2s. 6d. an acre | 3 | 0 | 0 |
| Weeding, at 6d. an acre | 0 | 12 | 0 |
| Harvesting, at 18s. an acre | 21 | 12 | 0 |
| Threshing five quarters an acre, and tying the straw up, at 3s. a quarter | 18 | 0 | 0 |
| Rent | 60 | 0 | 0 |
| Affessments, at 6s. in the pound | 18 | 0 | 0 |
| | 199 | 10 | 0 |

Cr. by Produce.

| | | | |
|--|-----|---|---|
| Crop, five quarters an acre, at 76s. a quarter | 456 | 0 | 0 |
| Straw, five loads an acre, at 45s. a load | 270 | 0 | 0 |
| | 726 | 0 | 0 |

Dr. to Expenses.

Beans, Twenty-four Acres.

| | £. | s. | d. |
|---|-----|----|----|
| Manure, 12 loads an acre, at 10s. a load | 144 | 0 | 0 |
| Ploughing at 10s. 6d. an acre | 12 | 12 | 0 |
| Seed, three bushels an acre, at 4s. 4½d. a bushel | 15 | 15 | 0 |
| Harrowing, at 1s. 6d. an acre | 1 | 16 | 0 |
| Hoeing, at 6s. an acre | 7 | 4 | 0 |
| Threshing five quarters an acre, at 2s. a quarter | 21 | 12 | 0 |
| Rent | 60 | 0 | 0 |
| Affessments, at 6s. in the pound | 18 | 0 | 0 |
| | 280 | 19 | 0 |

Cr. by Produce.

| | | | |
|--|-----|---|---|
| Crop, five quarters an acre, at 35s. a quarter | 210 | 0 | 0 |
| Straw, five loads an acre, at 30s. a load | 180 | 0 | 0 |
| | 390 | 0 | 0 |

Dr. to Expenses.

Oats, Twenty-four Acres.

| | £. | s. | d. |
|---|----|----|----|
| Ploughing, at 10s. 6d. an acre | 12 | 12 | 0 |
| Seed, eight bushels an acre, at 4s. a bushel | 38 | 8 | 0 |
| Harrowing, at 1s. 6d. an acre | 1 | 16 | 0 |
| Bush-harrowing and rolling, at 2s. 6d. an acre | 3 | 0 | 0 |
| Weeding, 6d. an acre | 0 | 12 | 0 |
| Harvesting, at 12s. an acre | 14 | 8 | 0 |
| Threshing, 10 quarters an acre, and tying the straw, at 2s. a quarter | 24 | 0 | 0 |
| Rent | 60 | 0 | 0 |
| Affessments, at 6s. in the pound | 18 | 0 | 0 |

Total 172 16 0

Cr. by Produce.

| | £. | s. | d. |
|--|------|----|----|
| Crop, 10 quarters an acre, at 32s. a quarter | 384 | 0 | 0 |
| Straw, five loads an acre, at 30s. a load | 180 | 0 | 0 |
| | 564 | 0 | 0 |
| Total | 6578 | 0 | 0 |
| Expense | 2501 | 11 | 0 |
| Profit | 4076 | 9 | 0 |

(Account 4.)

Expences of the Land.

| | £. | s. | d. |
|---|-----|----|----|
| Rent for 136 acres of grass-land, at 50s. an acre | 340 | 0 | 0 |
| Affessments at 6s. in the pound | 102 | 0 | 0 |
| Taxes | 170 | 0 | 0 |
| Interest of capital, laid out in buying stock, &c. 2987l. 17s. at eight per cent. | 239 | 0 | 7 |
| | 851 | 0 | 7 |

Returns.

| | £. | s. | d. |
|--|------|----|----|
| Profit on 136 acres of grass-land, as in account 2 | 341 | 5 | 0 |
| on 264 acres of tillage-land, as in account 3 | 4076 | 9 | 0 |
| Total | 4417 | 14 | 0 |
| Expense | 851 | 0 | 7 |
| Profit | 3566 | 13 | 5 |

V. Under the Tillage more distantly situated.

This is similar in all respects to the above, except in situation, which renders it necessary to confume the hay and straw upon the farm; consequently the statements demonstrate the variations in value of different situations. It is supposed, as above, that 264 acres of the land are in tillage; 36 in meadow, and the remaining 100 in pasture. The last portion, stocked as before with 70 oxen; ewes, one to the acre, 100; these are supposed to afford 125 lambs, which are to be sent to the market, and the ewes fattened on the rape after the peas. The profit on these articles is explained in

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in account N^o 2; the oxen 5*l.* each profit; the lambs 35*s.* each; the ewes bought in at 45*s.* and sold off at 75*s.* being brought to the market in winter, when mutton is dear. Ten horses only, as fewer will answer, there being only the corn to take to market; but more oxen should be kept. Such as are bought in, in the summer, should be fed on straw in the winter; four or six being employed in carting dung, harvest-work, &c. More pig-stock may likewise be kept; fifty being put in the yards. And as the clover hay is here to be eaten, the oxen should have some in the spring in the yard, to forward them for fattening off in the pastures. Consequently there is no profit in the hay, only from the oxen. Six of the horses to be annually sold, and others bought in. The oxen should be bought in, as there may be room in the summer; 88 being provided annually, and fattened, so as to have fresh stock every season: 18 being fed out in winter, and 70 in the summer season.

Expences of Stock, &c. (Account 1.)

| | £. | s. | d. |
|--|------|----|----|
| Purchase of 70 oxen, at 20 <i>l.</i> each, being bought in the summer, and wintered at straw | 1400 | 0 | 0 |
| One hundred ewes, at 45 <i>s.</i> | 225 | 0 | 0 |
| | 1625 | 0 | 0 |
| Ten horses, at 25 <i>l.</i> | 250 | 0 | 0 |
| Six cows, at 20 <i>l.</i> | 120 | 0 | 0 |
| A ram, at 5 <i>l.</i> | 5 | 0 | 0 |
| Eight pigs, at 30 <i>s.</i> | 12 | 0 | 0 |
| Two waggons, at 30 <i>l.</i> | 60 | 0 | 0 |
| Two carts, at 17 <i>l.</i> | 34 | 0 | 0 |
| Three ploughs, at 5 <i>l.</i> 5 <i>s.</i> | 15 | 15 | 0 |
| Four pair of harrows | 26 | 5 | 0 |
| A scarifier | 15 | 15 | 0 |
| A roller | 5 | 5 | 0 |
| Two wheelbarrows | 2 | 2 | 0 |
| A machine to dress corn | 15 | 15 | 0 |
| Shovels, spades, forks, scuttles, measures, &c. | 10 | 0 | 0 |
| Harness for ten horses, at 3 <i>l.</i> each | 30 | 0 | 0 |
| Household furniture | 200 | 0 | 0 |
| | 2427 | 17 | 0 |

Grass-Land. (Account 2.)

Stock Expences, &c.

| | £. | s. | d. |
|--|------|----|----|
| Purchase of stock, as in the first part of account 1 | 1625 | 0 | 0 |
| Eighteen oxen to eat hay in the winter, at 20 <i>l.</i> each | 360 | 0 | 0 |
| Clipping the sheep, and fundries | 2 | 0 | 0 |
| Fifty pigs, at 30 <i>s.</i> each | 75 | 0 | 0 |
| Mowing and grubbing thistles on the pasture-land, at 6 <i>d.</i> an acre | 2 | 10 | 0 |
| Harvesting thirty-six acres of hay, at 10 <i>s.</i> an acre | 18 | 0 | 0 |
| Rent of 136 acres, at 50 <i>s.</i> | 340 | 0 | 0 |
| Affessments, at 6 <i>s.</i> in the pound | 102 | 0 | 0 |
| | 2524 | 10 | 0 |

Returns.

| | £. | s. | d. |
|--|------|----|----|
| Sale of 70 oxen, at 30 <i>l.</i> each | 2100 | 0 | 0 |
| — of wool, 17 tods 24 <i>lb.</i> at 40 <i>s.</i> a tod | 35 | 14 | 3 |
| — of 100 ewes, at 75 <i>s.</i> | 375 | 0 | 0 |
| — of 125 lambs, at 35 <i>s.</i> | 218 | 15 | 0 |
| — of 18 oxen, at 30 <i>l.</i> | 540 | 0 | 0 |
| Profit on a cow and a calf sold | 3 | 0 | 0 |
| — on 6 cows sold | 30 | 0 | 0 |
| — on 6 horses sold | 30 | 0 | 0 |
| Fifty pigs sold, at 55 <i>s.</i> each | 137 | 0 | 0 |
| | 3469 | 9 | 3 |
| Total | 3469 | 9 | 3 |
| Expence | 2524 | 10 | 0 |
| | 945 | 19 | 3 |
| Profit | 945 | 19 | 3 |

By a trifling mistake in most of the above statements, the house-keeping and expences have been put into one of the separate accounts, instead of the general account, at the end of each farm; and in the same manner, the rent charged in account four, should have been brought into account 5; but these are of little consequence, as the sums of *total profit* must have been the same.

The tillage-land in this case is under the same courses as in the preceding farm.

(Account 3.)

Expences.

| | £. | s. | d. |
|---------------------|------|----|----|
| Vetches and turnips | 106 | 4 | 0 |
| Potatoes | 266 | 0 | 0 |
| Wheat | 186 | 18 | 0 |
| Flax | 387 | 6 | 0 |
| Rape, for seed | 123 | 18 | 0 |
| Wheat | 199 | 10 | 0 |
| Garden peas | 128 | 14 | 0 |
| Turnips | 112 | 4 | 0 |
| Barley | 166 | 0 | 0 |
| Clover | 159 | 12 | 0 |
| Wheat | 199 | 10 | 0 |
| Beans | 292 | 19 | 0 |
| Oats | 172 | 16 | 0 |
| | 2501 | 11 | 0 |

Produce.

| | £. | s. | d. |
|----------------------------------|------|----|----|
| Crops of vetches | 56 | 0 | 0 |
| — of turnips | 40 | 0 | 0 |
| Crop | 540 | 0 | 0 |
| Crop | 456 | 0 | 0 |
| Straw, at 30 <i>s.</i> an acre * | 36 | 0 | 0 |
| | 492 | 0 | 0 |
| Crop | 719 | 12 | 0 |
| Crop | 480 | 0 | 0 |
| Crop | 456 | 0 | 0 |
| Straw, at 30 <i>s.</i> per acre | 36 | 0 | 0 |
| | 2819 | 12 | 0 |
| Carry over | 2819 | 12 | 0 |

* Though all the straw and clover be consumed by the horses, cattle, &c. on the farm; yet, as the ploughing, harrowing, manuring, &c. of the crops are charged at the full price, it is necessary that in this account a fair rate should be allowed for the whole of the produce.

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| | £. | s. | d. |
|----------------------------|------|-----|----|
| Brought over | 2819 | 12 | 0 |
| Crop | - | 480 | 0 |
| Straw, at 30s. per acre | - | 36 | 0 |
| | | | |
| Crop | - | - | - |
| Crop | - | 230 | 8 |
| Straw, at 30s. per acre | - | 36 | 0 |
| | | | |
| Crop, at 2l. 10s. per load | - | - | - |
| Crop | - | 456 | 0 |
| Straw, at 30s. per acre | - | 36 | 0 |
| | | | |
| Crop | - | 210 | 0 |
| Straw, at 30s. per acre | - | 36 | 0 |
| | | | |
| Crop | - | 384 | 0 |
| Straw, at 30s. per acre | - | 36 | 0 |
| | | | |
| Total | 5090 | 0 | 0 |
| Expence | 2501 | 11 | 0 |
| | | | |
| Profit | 2588 | 9 | 0 |

(Account 4.)

Expence of the Land, &c.

| | £. | s. | d. |
|---|-----|----|----|
| Taxes, according to the stock | 130 | 0 | 0 |
| Interest of capital laid out in buying stock, &c. 2426l. 17s. at 8 per cent. | 194 | 2 | 11 |
| Four men-servants | 40 | 0 | 0 |
| Two servant-girls | 12 | 0 | 0 |
| House-keeping | 300 | 0 | 0 |
| Clothing for family | 50 | 0 | 0 |
| Farmer's expences in doing the business | 70 | 0 | 0 |
| | | | |
| Total | 796 | 2 | 11 |

Returns.

| | £. | s. | d. |
|-------------------------------------|------|----|----|
| Profit on the grass-land, 136 acres | 945 | 9 | 3 |
| — on the arable-land, 264 acres | 2588 | 9 | 0 |
| | | | |
| Total | 3533 | 18 | 3 |
| Expence | 796 | 2 | 11 |
| | | | |
| Total profit | 2737 | 15 | 4 |

It is shewn by these estimates, that the annual profit on one acre of land, under each of these different methods of husbandry, is in the following ratio :

| | £. | s. | d. |
|-------------------------------|----|----|----|
| On grazing farm | 0 | 6 | 6 |
| — dairy-farm | 0 | 14 | 6 |
| — hay-farm | 1 | 9 | 9 |
| — tillage-farm, 1st situation | 8 | 17 | 10 |
| — tillage-farm, 2d situation | 6 | 17 | 0 |

It is supposed, that in both the systems of management on the tillage-farm there are twelve horses employed for the purpose of market-work, and bringing in return such things as may be wanted ; and six of a lighter kind for the plough-teams, to be provided at less expence, and do more work in an equal portion of time.

And it is suggested, that by the improved manner of cropping employed there will never be more than twenty-four acres to manure at any one time, except at the wheat sowing season, and then even the quantity may be divided by that part of the land which has grown the potatoes being sown first, at the time they are taken up. By pulling up all the tops, and depositing them in the farm yards as litter, they, as well as the earth that is carried with them, will be restored to the land. The small potatoes should be used for the pigs. And by sowing the wheat immediately on the land cleared from the stems of the potatoes previous to their being ploughed up, an advantage is said to be derived. But from the danger of frost, no more of the tops should be removed at a time than can be ploughed up during the day.

In following this method, the next sowing of wheat will, it is supposed, be on the land that has grown rape for seed. It may likewise be sown first, where the potatoes are not ready to be taken up. And the third time of sowing wheat will be on the clover lay ; in which case there is plenty of time, as it may be done in winter, with nearly equal success, as from September to January. This, however, is not the case with spring crops, as all those of the grain kind should be got in as speedily as possible. But bean and pea crops may always be put in the soil a fortnight or three weeks previously to those of the corn kind ; and it is noticed, that where the land is all prepared, and the teams taken off for the purpose, there will be nine pair of horses, which will be capable of harrowing in the whole of these crops in three days. And the twenty-four acres of barley, and the twenty-four acres of wheat may be harrowed in the same space of time. This is considered as one of the great benefits of large teams, as such a great number being employed in carrying the produce, they are capable of being made use of for about twenty days in seed-time and harvest, and, of course, to earn nearly what they cost in keep in the whole of the year.

Other benefits are supposed to result from this scheme of cropping ; the harvest labour is more divided ; the flax and pea crops are ready in July, afterwards the oats, then the wheat, and lastly the beans. This, while it increases convenience, lessens expence. The rape may be threshed in the field, and sold early in August, furnishing money for the expences of the remaining harvest. Besides, there is hardly a month of the year, in which considerable returns of money are not coming in from one or other of the different operations. The flax may be sold on the ground to pull in July by the purchaser, which usually affords from seven to nine guineas the acre, which, though apparently a small sum in comparison with some other sorts of crops, is stated as paying well for the time it occupies the ground ; which is only about three months, being sown in April and pulled in July. By all these means the expences are diminished, and of course larger profits afforded. In short, these detailed accounts furnish the cultivator with the means of judging of the most advantageous modes of employing his land in the view of profit. They seem to prove three of the methods of farming to be very indifferent concerns, tillage husbandry having vastly the advantage over them ; and it is supposed that many further improvements are still to be made in it ; for which various hints are thrown out, and different calculations introduced.

It must constantly be kept in mind that, in all the different schemes of husbandry, the profits and benefits are to proceed, not only from the superiority of the management that may be employed, but the nature of the situation in regard to the facility and cheapness of stocking the land, and the ease of cultivating it ; as in some places the expences

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of the former will not be more than from five to seven or eight pounds the acre; while, in others, it may be from ten to twelve or thirteen pounds the acre, as is the case in several parts of Essex; and consequently the expences in the same proportions, though the variations in the markets for the disposal of the produce may be but trifling.

It would be easy to introduce other calculations on arable, and farms of other kinds, where great improvements are to be effected by claying, chalking, marling, liming, &c.; but as they must invariably be regulated by the local nature of the different situations, they could be of but little utility in guiding the practice of the farmer.

It does not admit of a doubt, that husbandry has been greatly improved in most of its different branches within these few late years in this country. Far better modes of cropping land, and of combining the feeding of cattle stock with arable management, have been introduced and adopted. More appropriate, cheap, and convenient tools for various purposes of tillage and other practices of farming have been invented; and most of the processes and operations of the art rendered more simple and easily performed. Yet still, if those laws and regulations which repress the efforts of the cultivator were modified or removed; leases more generally and liberally granted, for moderate periods of time; and the dissemination of useful information on rural business carefully attended to, the state of cultivation would soon be advanced to a much higher degree of perfection than it has yet attained.

HUSBANDRY, Broad-cast. See BROAD-CAST.

HUSBANDRY, Drill, that sort in which the seed is deposited in small furrows, drills, or openings, in rows, at different distances, according to the nature and circumstances of the soils and the crops by suitable machinery, and in which the after-culture is performed by the use of the horse-hoe, or other tools of a similar kind. See HOE, HOING, and MACHINE Drill.

For the introduction and extension of this method of husbandry in this country, we are principally indebted to Mr. Tull and his followers, who, in promoting it, seem to have considered it as altogether *new*; but this would appear from the account which has lately been published in the first volume of Communications to the Board of Agriculture, by Mr. Halcott, not to be the case, as it has been found to be the general practice in the Innacodah district in the East Indies, in the cultivation of all sorts of grain, except those of the horse kind, as well as in the growth of hemp, tobacco, cotton, and even the castor oil plant. And it is asserted on good authority, that, in Arabia, China, and Japan, where the modes of husbandry have not undergone any material change for thousands of years, they not only drill, but dibble corn of every description. It is of course probable, that the drill method of husbandry is of considerable antiquity, and that it was brought to Europe from some of the eastern nations.

But though this method of husbandry obviously possesses many advantages over that which is generally employed by farmers, it is far from being in general use in this kingdom; the reason of which is supposed to proceed from the difficulty of making common labourers acquainted with the nature of the practice; the incorrectness of the machinery that is made use of in delivering the seed, and the expence which is necessary for the first undertaking of the business. Other causes have likewise a tendency to impede its advancement, such as the introduction of it on land that is not in a proper state of preparation for its reception, either in regard to quality or the nature of the tillage, and the

neglecting in some measure the after-culture of the crops, upon which so much of its success depends. The attempting too great savings in the quantity of seed employed, by sowing too thinly in the drills, as well as at too great distances between the rows, has also in many instances operated much against it.

The soils that are most proper for this sort of husbandry, are all those of the more light and friable kinds, which are not so strong, heavy, or wet, as to prevent the working of the machinery which is necessary in executing the business. It can scarcely ever be had recourse to with much advantage; except for particular sorts of crops, on the stiff, heavy, wet, clayey soils, as the work must constantly be liable to be performed in an incomplete manner; nor even in such as are of a very stony quality, as those obstructions will constantly be apt to derange the operations of the machines, and thereby render the sowing irregular and improper.

But whatever the nature or quality of the soil may be on which this sort of husbandry is attempted, it should constantly be brought into a fine state of tilth by repeated ploughing, and other modes of pulverization, before the crops are put into the ground.

In doing which it will also be necessary to suit them, and the proportion of seed to the nature and quality of the land, and the distance of the rows to their growths; as well as to preserve a continued attention to their after-culture while on the ground.

In the practice of this mode of culture different distances in the rows and intervals have been advised, as disadvantages must obviously proceed from their being either too narrow or too large; in the former little benefit being capable of being derived in the cultivation of the crops after they have been deposited in the soil; while in the latter there will be great loss sustained in the over quantity of land that is taken up. It is probable, that in regard to distances, as well as the modes of drilling, much must constantly depend on the state and quality of the land.

Upon dry light soils, whether of the loamy, gravelly, or chalky kinds, which can be constantly ploughed and preserved on the flat, as is the case in East Kent, narrow distances are supposed the most proper. But where ridging up is required, they should be somewhat wider. It was found by actual trials that drilling three rows eleven or twelve inches asunder, on three bout ridges, generally succeeded in a perfect manner. In this way, the three bouts constitute a ridge about four and a half feet in breadth; the three rows as just mentioned occupying two feet, and the horse-hoe, going on the side of each outside row, at the distance of three inches, leaves the ridge two and a half feet broad, and the intervals between them nearly two feet. But it has been suggested, that, in these cases, as the outside rows constantly afford the strongest and most healthy plants, two rows only, on two-bout ridges, would be equally productive, and leave the ground in a better state of tilth. However this may be, the very wide intervals of the more early drill practice are to be discarded as highly improper in all crops of the grain kind, not only in consequence of the great loss of ground that must necessarily be sustained by such wide intervals; but because the spaces between the rows, when much narrower, can, in the improved mode of horse-hoeing, be stirred with equal correctness and facility.

In practicing this system of husbandry, it has been hinted by an experienced cultivator, that, with regard to wheat and barley, the distance of the rows should greatly depend on the quality of the soil. In cases where it is poor, the spaces between the rows should not be more than about
eight

eight inches; where of a medium quality about nine inches, and where rich, not more than ten inches. The quantity of seed being made to vary in the same way, from about nine pecks to eight and seven. And the depth of depositing it from two inches and a half to two inches.

In the extensive experience of the late Mr. Close, nine inches was the distance that answered best for white corn crops. See SEMINATION, and SOWING of Grain.

But for various sorts of green crops, such as those of the potatoe, cabbage, rape, turnip, carrot, parsnip, bean, pea, tare, and other similar kinds, much wider distances are required, as is sufficiently shewn under the culture of these different descriptions of crops.

The great advantages of this method of husbandry, are those of its affording the means of distributing the seed with much greater correctness in regard to depth, as well as regularity in the rows, by which the growth of the crops is not only more uniform, but their after-culture capable of being more effectually executed, and at the same time some saving in seed effected. And as the seed grain in this way is neither too closely crowded together, nor too thinly scattered in the drills, there is less danger of injury in the weakness of the produce from the former cause, or of loss from the too scanty number of stems in the latter, which is almost constantly the case in the common mode of management. Besides, by the equality of the depth to which the seed is deposited in this way, the crops become ripe in a more equal and uniform manner. Further benefits are likewise derived in different ways, by the frequent stirring and breaking down of the mould about the roots and stems of the plants, while the crops are upon the ground. By such frequent turnings the soil becomes newly and fully aerated, in consequence of which different nutritious matters are more abundantly formed and provided for the support of the crops; and the earth at the same time rendered more easily penetrable by the superficial roots of the grain, and its power of tillering increased by the mould being laid up to the joints of the stems, just above the surface of the land. There are also other ways in which benefit is derived in this mode of cultivation; as by the more effectual eradication of weeds that constantly takes place, the harvesting of the crops is more readily and certainly accomplished, and at less trouble and expence; while the land is left in a more mellow and fine state for the production of future crops, as well as for the immediate putting in of succeeding ones. See HOEING.

HUSBANDRY, *Implements of*, the various sorts of tools that become necessary in the cultivation and management of land, as those of the tillage, dairy, and other kinds. See IMPLEMENTS of Husbandry.

HUSBANDRY, *Virgilian*, a term used by authors to express that sort of husbandry, the precepts of which are so beautifully delivered in Virgil's Georgics. The husbandry in England is Virgilian in general, as is seen by the method of paring and burning the surface, of raftering or cross-ploughing, and of the care in destroying weeds upon the same principle, and by much the same means. In those parts of England along the southern coast, where the Romans principally inhabited, not only the practice, but the expressions are in many respects the same with those of the ancient Romans, many of the terms used by the ploughmen being of Latin origin, and the same with those used by those people on the like occasions. And on a strict observation, more of Virgil's husbandry is at this time practised in England than in Italy itself. This change in the Italian husbandry is, however, much more to the credit of that people than the retaining the Virgilian scheme is to our's.

Tull, who has established a new method of husbandry, observes that it is upon the whole so contradictory to this old plan, that it may be called the anti-Virgilian husbandry; and adds, that no practice can be worse than the Virgilian.

HUSBRECE, in our *Old Writers*, an offence now called burglary.

The word is Saxon, from *hus*, a house, and *brice*, a breaking. Blount, in voc.

HUSBY, in *Geography*, a town of Sweden, in Dalecarlia; nine miles N. of Hedemora.

HUSCANS, in our *Old Writers*, a sort of boot or buskin made of coarse cloth, and worn over the stockings. We find them mentioned in the stat. 4 Edw. IV. cap. 7.

HUSET, in *Geography*, a town of Hungary; 24 miles E. of Munkacz.

HUSGABLE, HUSGABLUM, in our *Old Writers*, denotes house-rents, or some tax or tribute laid upon houses.

HUSHING, in *Mining*, is applied, in Cornwall, to a mode of discovering float and shoad tin, or alluvial collections of tin ore, by turning a strong stream of water successively over different parts of the surface, to wash away all the vegetable soil and loose earth. (William's Mineral Kingdom, vol. i. p. 313, 2d edit.) Around Merthyr Tydvil, and other places in South Wales, much of the iron ores are obtained by this destructive process, equally depriving the sides of hills of their soil, and covering valuable meadows with this earth and stones: many hundred acres of valuable meadows below Merthyr town have, within a few years past, been covered several feet deep with earth and stones, over which every flood of the river spreads and moves and disturbs it, so that the whole width of the valley is without vegetation, and presents a scene of devastation, nowhere else to be witnessed, but on the sand and beach of the flat shores of the ocean: already a strong wall has been found necessary to confine the stream and this torrent of earth from overwhelming the lower part of the town, which is increasingly in danger of the fate of Ostia on the Tiber, if this destructive mode of disposing of the rubbish from the iron-stone mines is suffered much longer to exist.

HUSK, among *Botanists*, the part which a flower grows out of. See GLUMA.

The husks or cups of the flowers of plants are not so much regarded with a view to their medicinal virtues as they deserve. Petiver, in the Philosophical Transactions, speaking of the virtues of the verticillate class of plants, among which are included the sage, rosemary, and the like, observes that it is an erroneous, though general opinion, that the flowers of these plants contain their principal virtues, for that the husks are the part in which it is lodged. For instance, in the rosemary, the fine scent of the Hungary-water is not in the flowers, but husks; and the flowers alone, when clean picked from them, yield very little odour. The cup, in this and other plants of the same class, is the only part in which their viscous and sulphureous qualities are lodged, and that something of this kind is deposited particularly there, may be perceived by the touch and smell; for they appear moist, and feel clammy; and this clammy matter, when received upon the fingers, is of a very strong and agreeable smell, much more so than the rest of the plant.

HUSK denotes a disease of young bullocks. See COUGH.

HUSKS, *Fossil*, in *Natural History*. The husks, shivers, juli or catkins, and other light parts of hazel, alder, willow, &c. are found in great quantities deep in the alluvial earth and peat, of wide and flat valleys. Parkinson's Org. Rem. vol. i. p. 94.

HUSO GERMANORUM, in *Ichthyology*, the name of a large fish of the sturgeon or acipenser kind, without tubercles, caught in the Danube, Boristhenes, and other large rivers, and passing at times into the sea. It has a very long snout, and under it either four or eight beards; it has one back-fin, which is placed near the tail, and two pair under the belly; its general shape somewhat resembles that of the pike, and its back is black and its belly yellow; it has thirteen dorsal and forty-three caudal scales, and has cartilages instead of bones. It is caught in October and November, and in some places till January; and great numbers of them are usually brought to market together in those months in the countries where they are caught. They always swim in shoals. It grows to twenty-four feet long, and weighs one, two, three, or even four hundred pounds. The drug called isinglass, and the food called caviar, are prepared from this fish.

HUSS, JOHN, in *Biography*. See **HUSSITES**.

HUSSARS, HUSSARDS, or Hussarts, an order or species of soldiery in Poland and Hungary, commonly opposed to the Ottoman cavalry.

The hussars are horsemen, whose uniform is a large furred cap, adorned with a cock's feather; those of the officers with an eagle's or heron's; a very short waistcoat with breeches and stockings in one piece: short light boots; and a doublet, having five rows of buttons, which hangs loosely on the left shoulder. Their arms are, a long crooked sabre, light carbines, and pistols. Before they begin an attack, they lay themselves flat on the necks of their horses; but being come within pistol shot of the enemy, they raise themselves with such quickness, and fall on with such alertness, that it is very difficult for the troops they oppose to preserve their order. In a retreat no other cavalry can pretend to follow them; as they leap over ditches, and swim through rivers with a surprising facility. Most of the princes on the continent have troops under this name.

HUSSEIANABAD, in *Geography*, a town of Asiatic Turkey, in the government of Sivas; 42 miles S. W. of Amasieh.

HUSSEINGUNGE, a town of Hindoostan, in Rohilcund, on the Ganges; 26 miles W. S. W. of Budayoon.

HUSSES, a town of Arabia, in Yemen; seven miles E. of Sana.

HUSSEY, GILES, in *Biography*, a painter, born of a good family, in Dorsetshire. He was the pupil of Richardson in England, and afterwards of Damini and Ercole Lelli, in Italy, where, during a stay of some years at Rome and Bologna, he raised expectations which were grievously disappointed on his return. Disdaining portraiture, discountenanced in history, Husses was reduced to the solitary patronage of the then duke of Northumberland, who offered to receive him into his family, and give him a handsome pension, with the attendance of a servant, upon the condition that he should employ his talents chiefly, though not exclusively, for the duke. This offer he rejected, because the duke did not comply with his request of keeping a priest in the house for him. Husses, a bigot in religion, was attached to the creed of Rome; but had he not been so, commissions and patronage, almost confined to drawing copies, even from the antique, was certainly sufficiently provoking for a man of an original turn of mind to be rejected. He afterwards became exceedingly distressed for the means of living; but upon making his wants known to his brother, who had succeeded to the family estate, he was treated in the most kind manner; and, after his generous brother's decease, enjoyed himself the estate for some years, after which he disposed of it, and retired to Bealton, in Devonshire, where he died, in 1788, at the age of 71. He was a complete instance of the danger

of philosophizing too much upon art, which requires more practice and good sense than over-refined systems of thinking. He spent the best part of his life in reducing, uselessly, the proportions of the human form, in all its various actions, to the musical scale of concords, and produced fanciful analogies which no painter, whose mind is capable of grasping the true beauties of art, will stay, or ought to stay, to consider. Thus he lost the time which should have been devoted to the practice of art, and when the hand and the imagination were required, both were found deficient. But he was an ingenious and highly respectable character.

HUSSINGABAD, in *Geography*, a town of Hindoostan, in the circar of Hindia, on the S. bank of the Nerbuddah river; 120 miles N. E. of Burhanpour. N. lat. 22° 42' 30". E. long. 77° 54'.

HUSSITES, in *Ecclesiastical History*, a party of reformers, the followers of John Hufs.

John Hufs, from whom the Hussites take their name, was born in a little village, called "Huffinez," in Bohemia, about the year 1376, and lived at Prague, in the university of which he was educated, in the highest reputation, both on account of the sanctity of his manners, and the purity of his doctrine. In the year 1396 he took the degree of M. A., and soon after that of B. D. In 1400 his abilities and piety had so far recommended him, that he was chosen confessor to the queen, and eight years after he was elected rector of the university. He was distinguished by his uncommon erudition and eloquence, and performed at the same time the functions of professor of divinity in the university, and of ordinary pastor in the church of that city. During the course of these honours he obtained a benefice amply endowed by John Mulheim, a person of large fortune at Prague. By the marriage of Ann, sister of the king of Bohemia, with Richard II. of England, in 1381, a communication and intercourse were opened between England and Bohemia; and a young Bohemian nobleman, who had finished his studies in the university of Prague, spent some time at Oxford; and on his return put into the hands of Hufs the writings of Wickliff. He adopted the sentiments of Wickliff, and the Waldenses; and in the year 1407 began openly to oppose and preach against divers errors in doctrine, as well as corruptions in point of discipline, then reigning in the church. Hufs likewise endeavoured to the utmost of his power to withdraw the university of Prague from the jurisdiction of Gregory XII., whom the kingdom of Bohemia had hitherto acknowledged as the true and lawful head of the church. This occasioned a violent quarrel between the incensed archbishop of Prague, who was an illiterate man, to such a degree that he was called "Alphabetarius," or the A B C doctor, and who, without sufficient authority from the pope, had committed the works of Wickliff to the flames; and the zealous reformer, which the latter inflamed and augmented, from day to day, by his pathetic exclamations against the court of Rome, and the corruptions that prevailed among the sacerdotal order. The archbishop, by his own authority, prohibited Hufs from preaching in his chapel of Bethelam, to which he had been appointed by Mulheim; upon which Hufs, as a member of the university, which held immediately of the Roman see, appealed to the pope.

There were other circumstances that contributed to inflame the resentment of the clergy against him. He adopted the philosophical opinions of the Realists, and vehemently opposed and even persecuted the Nominalists, whose number and influence were considerable in the university of Prague. He also multiplied the number of his enemies in the year 1408, by procuring, through his great credit, a sentence in favour of the Bohemians, who disputed with the Germans concerning the number

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number of suffrages which their respective nations were entitled to in all matters that were carried by election in this university. In consequence of a decree, obtained in favour of the former, which restored them to their constitutional right of three suffrages, usurped by the latter, the Germans withdrew from Prague, and in the year 1409, founded a new academy at Leipsick. This event no sooner happened than Hufs began to inveigh with greater freedom than he had before done against the vices and corruptions of the clergy, and to recommend, in a public manner, the writings and opinions of Wickliff, as far as they related to the papal hierarchy, the despotism of the court of Rome, and the corruption of the clergy. Hence an accusation was brought against him, in the year 1410, before the tribunal of John XXIII. by whom he was solemnly expelled from the communion of the church. Notwithstanding this sentence of excommunication, he proceeded to expose the Romish church with a fortitude and zeal that were almost universally applauded.

Some tumults having taken place among the followers of Hufs, in which he had no concern, and which, indeed, he lamented, and endeavoured to suppress, Wincellaus, king of Bohemia, banished him from Prague, upon which he retired to his native place, and lived there unmolested. During his retreat at Hussinez he composed his celebrated treatise "Upon the Church;" and here he also dated a paper entitled "The Six Errors;" which he fixed on the gates of the chapel at Bethelam. It was levelled against indulgences, the abuse of excommunication, believing in the pope, the unlimited obedience required by the see of Rome, simony, and making the body of Christ in the mass.

This eminent man, whose piety was equally sincere and fervent, though his zeal was perhaps too violent, and his prudence not always circumspect, was summoned to appear before the general council of Constance, convened in the year 1414; whither princes and prelates, clergy and laity, regulars and seculars, flocked together from all parts of Europe. Secured, as he apprehended, from the rage of his enemies by the safe conduct granted him by the emperor Sigismund, for his journey to Constance, his residence in that place, and his return to his own country; John Hufs obeyed the order of the council, and appeared before it, to demonstrate his innocence, and to prove that the charge of his having deserted the church of Rome was entirely groundless. However, his enemies so far prevailed, that, by the most scandalous breach of public faith, he was cast into prison, declared a heretic because he refused to plead guilty against the dictates of his conscience, in obedience to the council, and burnt alive July 6th, 1415; a punishment which he endured with unparalleled magnanimity and resignation.

We shall here subjoin some farther interesting particulars relating to the close of this eminent reformer's life. Whilst his fate was in suspense, his friends in Bohemia were sufficiently active; and at length a petition was sent through the kingdom, and subscribed by almost the whole body of the Bohemian nobility and gentry. It was dated in May, 1415, and was addressed to the council of Constance. The first petition, complaining of the treatment which he had received, soliciting that a speedy end might be put to his sufferings by allowing him an audience, having been disregarded, a second and a third were presented, urging his release, and offering any security for his appearance. The last petition to the council was accompanied by another to the emperor, pressing upon him a regard to his honour solemnly engaged for the security of Hufs, and imploring his protection and interest with the council. The emperor in this case was undoubtedly chargeable with a most notorious breach of faith;

though the blame is generally laid, and with some reasons, upon the council, who directed his conscience. Hufs was at length, after repeated delays, summoned to appear before the council; but as soon as he began to reply to the first charge, a most indecent and tumultuous clamour began; and the disorder and noise were so great that he could not proceed. "In this place," said Hufs, who was the most dispassionate of men, looking round him, "I hoped to have found a different treatment." His rebuke increased the clamour; and without attempting any further defence he held his peace. "He was now confounded," exclaimed the tumultuous assembly with seeming triumph, "silenced, by confession guilty." On the next day the council resumed its meeting, and the emperor Sigismund, disgusted and offended at its preceding conduct, determined to maintain a more decent behaviour. The first charge exhibited against Hufs was his denying the real presence. To which he had only to answer, that he had always held the true Catholic doctrine, which was a known fact among his friends, for he had ever believed transubstantiation. He was next charged in general with maintaining the pernicious errors of Wickliff. To which he answered, that he had never held any error which he knew to be such; and that he desired nothing more than to be convinced of any errors into which he might have inadvertently fallen. Wickliff's doctrine of tythes was objected to him, which he owned he knew not how to refute. He had also expressed himself against burning the books of Wickliff, and he acknowledged that he had spoken against burning them in the manner practised by the archbishop of Prague, who condemned them to the flames without examining them. He was further charged with saying, that he wished his soul in the same place where Wickliff's was. He owned having used this expression, which afforded matter of great mirth to his hearers. He was afterwards charged with sedition, in exciting the people to take arms against their sovereign, from which charge he entirely exculpated himself. After the discussion of some other trifling particulars the council rose, and Hufs was carried back to prison. In his way thither the emperor turned to him and told him, that he had given him his safe conduct, which he found was more than was well in his power, that he might have an opportunity to vindicate his character. "But, depend upon it," said he, "if you continue obstinate, I will make a fire with my own hands to burn you rather than you shall escape." To which address Hufs replied, that he could not charge himself with holding any opinions obstinately, that he came thither with joy rather than with reluctance; that if any doctrine better than his own could be laid before him in that learned assembly, he might see his error and embrace the truth. Upon again appearing before the council, not fewer than 40 articles were brought against him. Of these the chief were extracted from his books, and some of them by very unfair deduction.

The following opinions, among many others, which gave offence, were esteemed most criminal: "That there was no absolute necessity for a visible head of the church; that the church was better governed in apostolic times without one; that the title of holiness was improperly given to man; that a wicked pope could not possibly be the vicar of Christ, that he denied the very authority on which he pretended to act; that liberty of conscience was every one's natural right; that ecclesiastical censures, especially such as touched the life of man, had no foundation in scripture; that ecclesiastical obedience should have its limits; that no excommunication should deter the priest from his duty; that preaching was as much required from the minister of religion, as alms-giving from the man of ability; and that neither of them

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them could hide his talent in the earth without incurring the divine displeasure." Paletz and the cardinal of Cambray were the chief managers of this examination.

Besides these opinions, most of which were proved and acknowledged, he threw out many things in the course of his examination which were eagerly laid hold on; particularly against the scandalous lives of the clergy of every denomination; the open simony practised among them, their luxury, lewdness, and ignorance.

Hufs having now been examined on all those articles, which the nicest scrutiny into his books, and the most exact remembrance of his words could furnish, the cardinal of Cambray thus accosted him: "Your guilt hath now been laid before this august assembly with its full force of evidence: I am obliged, therefore, to take upon me the disagreeable task of informing you, that only this alternative is offered to you: either to abjure these damnable errors, and submit yourself to the council; in which case these reverend fathers will deal as gently with you as possible, or to abide the severe consequence of an obstinate adherence to them." To this Hufs answered, "that he had nothing to say, but what he had often said before; that he came there not to defend any opinion obstinately; but with an earnest desire to see his errors and to amend them; that many opinions had been laid to his charge, some of which he had never maintained, and others, which he had maintained, were not yet confuted; that as in the first case, he thought it absurd to abjure opinions which were never his; so in the second, he was determined to subscribe nothing against his conscience."

The emperor told him, he saw no difficulty in his renouncing errors which he had never held. "For myself," said he, "I am, at this moment, ready to renounce every heresy that hath ever existed in the Christian church; does it therefore follow that I have been an heretic?"

Hufs respectfully made a distinction between abjuring errors in general, and abjuring errors which had been falsely imputed; and prayed the council to hear him upon those points which to them appeared erroneous; were it only to convince them that he had something to say for the opinions he maintained. To this request, however, the council paid no attention.

Here Paletz and De Cassis took an opportunity to exculpate themselves of any appearance of malice in this disagreeable prosecution. They both entered upon the task with great unwillingness, and had done nothing but what their duty required. To this the cardinal of Cambray added, that he could sufficiently exculpate them on that head. They had behaved, he said, with great humanity; and to his knowledge might have acted a much severer part.

The emperor observing, that every thing, which the cause would bear, had now been offered, arose from his seat, and thus addressed himself to the council:

"You have now heard, reverend fathers, an ample detail of heresies, not only proved, but confessed; each of which unquestionably, in my judgment, deserveth death. If, therefore, the heretic continueth obstinate in the maintenance of his opinions, he must certainly die. And if he should even abjure them, I should by no means think it proper to send him again into Bohemia; where new opportunities would give him new spirits, and raise a second commotion worse than the first. As to the fate, however, of this unhappy man, be that as it may hereafter be determined; at present, let me only add, that an authentic copy of the condemned articles should be sent into Bohemia, as a ground-work for

the clergy there to proceed on; that heresy may at length be rooted up, and peace restored to that distracted country."

The emperor having finished his speech, it was agreed in the council to allow Hufs a month longer to give in his final answer. With the utmost difficulty he had supported himself through this severe trial. Besides the malice of his enemies, he had upon him the paroxysm of a very violent disorder. On this last day he was scarcely able to walk, when he was led from the council. His consolation in these circumstances was a cold and hungry dungeon, into which he was inhumanly thrust.

His friend, the baron, attended him even hither, and with every instance of endearing tenderness, endeavoured to support him. The suffering martyr wrung his hand; and looking round the horrid scene, earnestly cried out, "Good God! this is friendship indeed!" His keepers soon after put him in irons; and none but such as were licensed by the council were allowed to see him.

The generous nature of Sigismund, though he was not unversed in the artifices of the cabinet, abhorred a practised fraud. The affair of Hufs, amidst all the casuistry of the council, gave him keen distress; and he wished for nothing more ardently than to rid his hands of it with honour. On the other side, his vanity and his interest engaged him to appear the defender of the Catholic cause in Germany. If he suffered Hufs to be put to death one part of the world would question his honour; if he interfered with a high hand in preserving him, the other part would question his religion. The perplexity was great; from which he thought nothing could relieve him but the recantation of Hufs.

To obtain this he tried every means in his power. He had already endeavoured to intimidate him with high language which he had used, both in the council and in other places. But this was ineffectual. He had now recourse to soothing arts. The form of a recantation was offered; in which Hufs was required only to renounce those heresies which had been fairly proved. But he continued still inflexible. Several deputations were afterwards sent to him in prison; and bishops, cardinals, and princes in vain tried their eloquence to persuade him.

Sigismund, seeing the conclusion to which this fatal affair was approaching, might probably have interested himself thus far, as thinking he had been too condescending to the council. The flame also, which he saw kindling in Bohemia, where he had high expectations, and was willing to preserve an interest, might alarm him greatly. He had gone too far, however, to recede, and knew not how to take Hufs out of the hands of the council, into which he had given him with so much zeal and devotion.

In the mean time Hufs remained master of his fate, and shewed a constancy which scarce any age hath excelled. He amused himself, while it was permitted, with writing letters to his friends, which were privately conveyed by the Bohemian lords who visited him in prison. Many of these letters are still extant. The following, which is the substance of one, of them, may be a test of that composed piety and rational frame of mind which supported him in all his sufferings.

"My dear friends, let me take this last opportunity of exhorting you to trust in nothing here, but to give yourselves up entirely to the service of God. Well am I authorized to warn you not to trust in princes, nor in any child of man, for there is no help in them. God only remaineth stedfast. What he promiseth, he will undoubtedly perform. For myself, on his gracious promise I rest. Having endeavoured to be his faithful servant, I fear not being deserted by him. Where I am, says the gracious Promiser, there shall my servant be. May the God of heaven preserve you!—This is

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probably the last letter I shall be enabled to write. I have reason to believe I shall be called upon to-morrow to answer with my life. Sigismund hath in all things acted deceitfully. I pray God forgive him! You have heard in what severe language he hath spoken of me."

The month, which had been allowed by the council, being now expired, a deputation of four bishops came to receive his last answer, which was given in the same language as before.

The sixth of July was appointed for his condemnation, the scene of which was opened with extraordinary pomp. In the morning of that day, the bishops and temporal lords of the council, each in his robes, assembled in the great church at Constance. The emperor presided in a chair of state. When all were seated, Hufs was brought in by a guard. In the middle of the church a scaffold had been erected; near which a table was placed, covered with the vestments of a Romish priest.

After a sermon, in which the preacher earnestly exhorted his hearers to *cut off the man of sin*, the proceedings began. The articles alleged against him were read aloud; as well those, which he had, as those which he had not allowed. This treatment Hufs opposed greatly; and would gladly, for his character's sake, have made a distinction; but finding all endeavours of this kind ineffectual, and being indeed plainly told by the cardinal of Cambrai, that no farther opportunity of answering for himself should be allowed, he desisted; and falling on his knees, in a pathetic ejaculation, commended his cause to Christ.

The articles against him, as form required, having been recited, the sentence of his condemnation was read. The instrument is tedious: in substance it runs, "That John Hufs, being a disciple of Wickliff, of damnable memory, whose life he had defended, and whose doctrines he had maintained, is adjudged by the council of Constance (his tenets having been first condemned) to be an obstinate heretic; and as such, to be degraded from the office of a priest; and cut off from the holy church."

His sentence having being thus pronounced, he was ordered to put on the priest's vestments, and ascend the scaffold, according to form, where he might speak to the people; and, it was hoped, might still have the grace to retract his errors. But Hufs contented himself with saying once more, that he knew of no errors which he had to retract; that none had been proved upon him; and that he would not injure the doctrine he had taught, nor the consciences of those who had heard him, by ascribing to himself errors, of which he had never been convinced.

When he came down from the scaffold, he was received by seven bishops, who were commissioned to degrade him. The ceremonies of this business exhibited a very unchristian scene. The bishops, forming a circle round him, each adding a curse took off a part of his attire. When they had thus stripped him of his sacerdotal vestments, they proceeded to erase his tonsure, which they did by clipping it into the form of a cross. Some writers say, that in doing this, they even tore and mangled his head; but such stories are unquestionably the exaggeration of Protestant zeal. Their last act was to adorn him with a large paper cap; on which various and horrid forms of devils were painted. This cap one of the bishops put upon his head, with this unchristian speech, "Hereby we commit thy soul to the devil." Hufs smiling, observed, "It was less painful than a crown of thorns."

The ceremony of his degradation being thus over, the bishops presented him to the emperor. They had now done, they told him, all the church allowed. What remained was of civil authority. Sigismund ordered the duke of Bavaria to receive him, who immediately gave him into the

hands of an officer. This person had orders to see him burned, with every thing he had about him.

At the gate of the church a guard of 800 men waited to conduct him to the place of execution. He was carried first to the gate of the episcopal palace, where a pile of wood being kindled, his books were burned before his face. Hufs smiled at the indignity.

When he came to the stake, he was allowed some time for devotion; which he performed in so animated a manner, that many of the spectators, who came there sufficiently prejudiced against him, cried out, "What this man hath said within doors we know not, but surely he prayeth like a Christian."

As he was preparing for the stake, he was asked whether he chose a confessor? He answered in the affirmative; and a priest was called. The design was to draw from him a retraction, without which, the priest said, he durst not confess him. "If that be your resolution, said Hufs, I must die without confession: I trust in God, I have no mortal sin to answer for."

He was then tied to the stake with wet cords, and fastened by a chain round his body. As the executioners were beginning to pile the faggots around him, a voice from the croud was heard, "Turn him from the east; turn him from the east." It seemed like a voice from heaven. They who conducted the execution, struck at once with the impropriety, or rather profaneness of what they had done, gave immediate orders to have him turned due west.

Before fire was brought, the duke of Bavaria rode up, and exhorted him once more to retract his errors. But he still continued firm. "I have no errors," said he, "to retract; I endeavoured to preach Christ with apostolic plainness; and I am now prepared to seal my doctrine with my blood."

The faggots being lighted, he recommended himself into the hands of God, and began a hymn, which he continued singing, till the wind drove the flame and smoke into his face. For some time he was invisible. When the rage of the fire abated, his body, half consumed, appeared hanging over the chain; which, together with the post, were thrown down, and a new pile heaped over them. The malice of his enemies pursued his very remains. His ashes were gathered up and scattered in the Rhine, that the very earth might not feel the load of such enormous guilt.

From this view of the life and sufferings of Hufs, it is hard to say what were the real grounds of the animosity he had raised. His creed unquestionably was far from being exactly orthodox; yet it is plain how very ill able his adversaries were to gather from it offensive matter enough for an accusation. He believed transubstantiation; he allowed the adoration of saints; he practised confession; he spoke cautiously of tradition, and reverently of the seven sacraments; and whatever latitude he might give himself on any of these articles, it was not more than had been often taken, inoffensively taken, by Gerson, Zabarelle, and other spirited divines of the Romish church.

Besides, the great pains the council took to avoid a public question, and the great confidence with which Hufs desired one, are presumptions very strong in his favour.

It is the opinion of Lenfant, that the great cause of his condemnation was his introducing Wickliff's doctrine into Bohemia; and chiefly perhaps that offensive part of it which struck at the temporalities of the clergy. And, indeed, this is extremely probable from the whole conduct of the council; for though it is apparent, that he never adopted the entire system of that reformer; yet his principles, it is certain, would have led him much farther than they had hitherto

done; and the fathers of the council being aware of this, seem to have determined, though at the expence of justice, to crush an evil in its origin, which appeared teeming with so much mischief.

Besides this, there seems to have been another cause for that unabated prejudice which ran so high against him. The warmth with which he treated the corruptions of the clergy, and the usurpations of the church of Rome, was a crime never to be forgiven by the ecclesiastics of those times; and added the keenest edge to their resentment. But as this was an unpopular cause to appear in, it is plain they wanted to have it believed their resentment arose upon another account. This seems to have been the foundation of a speech, attributed by Varillas to cardinal Perron; "My learned friends," (he would say) "you cannot employ your time worse than in giving the world any account of the affairs of Huss."

His life, however, was the severest satire upon the clergy. It was a mirror which reflected their distorted features. In him they saw the true ecclesiastic and the real Christian, characters so different from their own. Gentle and condescending to the opinions of others, this amiable pattern of virtue was strict only in his own principles. The opinions indeed of men were less his concern than their practice. His great contest was with vice; and he treated the ministers of religion with freedom, only as he thought their example encouraged, rather than checked, that licence which prevailed. The great lines in his character were piety and fortitude. His piety was calm, rational, and manly; his fortitude nothing human could daunt. The former was free from enthusiasm; the latter from weakness. He was in every respect an apostolical man. "From his infancy," (says the university of Prague in a voluntary testimonial,) he was of such excellent morals, that during his stay here, we may venture to challenge any one to produce a single fault against him.

As to his parts and acquirements, he seems to have been above mediocrity; and yet not in the highest form in respect of either. A vein of good sense runs through all his writings, but their distinguishing characteristics are simplicity and piety.

To preserve the memory of this excellent man, the sixth of July was, for many years, held sacred among the Bohemians. A service, adapted to the day, was appointed to be read in all churches; and instead of a sermon, an oration was spoken in commendation of their martyr, in which the noble stand he made against ecclesiastical tyranny was commemorated, and his example proposed as a pattern to all Christians.

In some places large fires were lighted in the evening upon the mountains, to preserve the memory of his sufferings; round which the country-people would assemble, and sing hymns in his praise.

A very remarkable medal was struck in honour of him, on which was represented his effigy, with this inscription, CENTUM REVOLUTIS ANNIS DEO RESPONDEBITIS ET MIHI. These words are said to have been spoken by him to his adversaries a little before his execution; and were afterwards applied by the zealots of his sect as prophetic of Luther, who lived about an hundred years after him. The story carries with it an air of irrational zeal, and seems calculated only for the credulous.

The same unhappy fate was borne by Jerome of Prague, his intimate companion, who attended the council, in order to support his persecuted friend. Jerome, indeed, was terrified into temporary submission; but he afterwards resumed his fortitude, and maintained the opinions, which he had for

a while deserted through fear, in the flames, in which he expired the 30th of May, 1416. See JEROME.

The disciples of Huss adhered to their master's doctrine after his death with a zeal which broke out into an open war, that was carried on with the most savage and unparalleled barbarity. John Ziska, a Bohemian knight, in 1420, put himself at the head of the Hussites, who were now become a very considerable party, and threw off the despotic yoke of Sigismund, who had treated their brethren in the most barbarous manner. Ziska was succeeded by Procopius, in the year 1424. The acts of barbarity that were committed on both sides were shocking and horrible, beyond expression; for notwithstanding the irreconcilable opposition between the religious sentiments of the contending parties, they both agreed in this one horrible principle, that it was innocent and lawful to persecute and extirpate with fire and sword the enemies of the true religion; and such they reciprocally appeared to each other. These commotions in a great measure subsided by the interference of the council of Basil, in the year 1433.

The Hussites, who were divided into two parties, viz. the Calixtines and Taborites, spread over all Bohemia and Hungary, and even Silesia and Poland; and there are some remains of them still subsisting in all those parts. Mosheim's Eccl. Hist. vol. iii. p. 406—412, 446—448, &c. Eng. ed. 8vo. 1790. Gilpin's Lives.—Life of John Huss.

HUSSUNABAD, in *Geography*, a town of Bengal; 15 miles W. of Dacca.

HUSSUN-ABDAL, a town of Hindoostan, in Lahore, 130 miles N. W. of Lahore. N. lat. 33°. E. long. 71° 45'.

HUSTINGS. See *COURT of Hustings*.

HUSUM, in *Geography*, a sea-port town of Denmark, on the W. coast of the duchy of Sleswick, constituted a city in the year 1608, formerly famous for exporting great quantities of malt. It was also famous for the oyster trade. The chief commerce at present consists in beer, cattle, and horses; 18 miles W. of Sleswick. N. lat. 54° 32'. E. long. 9° 6'.

HUSWA, a town of Hindoostan; 20 miles N.W. of Allahabad.

HUT, or HUTT, from the Saxon *hutte*, a small cottage or hovel.

The word is also used for the soldiers' lodges in the field; otherwise called barracks or caserns.

HUT, in *Rural Economy*, the common name of a low sort of building of the cottage kind generally constructed of an earthy sort of material, such as strong loamy clay, &c. A number of huts of this description have within these few years been built on the borders of the South Esk river in Scotland, which have a very neat and rural appearance, affording the idea, at a distance, of their being formed of a kind of brown brick-work.

In this case the composition of the materials which are employed is a sort of muddy clay-blended with the roots of plants of the aquatic kind, which are dug from out of the flood mark of the river, in such sizes and shapes as may be suitable for the purpose that is intended. The pieces or peats, as they are there called, are generally cut out in the form of bricks, but somewhat larger, being prepared in every respect in the manner of peat-fuel. It is usual, in some cases, to build these huts with lime-mortar, but more commonly with clay only.

These huts are usually preferred by the cottagers to those which are built of stone, being warmer, and not much less durable.

It seems not improbable but that a similar sort of material for building this sort of cottages may be met with in many situations

situations where it has not yet been discovered, and be made use of in this way as well as for fences of the wall kind. See COTTAGE.

HUTA, a town of Lithuania, in the palatinate of Novogrodek; 40 miles E.N.E. of Novogrodek.

HUTCH, among *Farmers*, denotes a vessel or particular place in which to lay corn; also, a kind of hollow trap for the taking of weasels or other vermin alive; and it also signifies a fort of case, formed of boards and slips of wood, opening in front, and divided within for keeping and breeding rabbits.

HUTCHESON, FRANCIS, in *Biography*, an elegant writer and ingenious philosopher, son of a dissenting minister in the north of Ireland, was born on the eighth of August, 1694. After receiving a proper education at a grammar school, he was sent to an academy to begin his philosophical course. In 1710 he was entered a student at the university of Glasgow, in Scotland, where he renewed his application to the study of the languages, but chiefly devoted himself to the divinity course. After spending six years in the university of Glasgow, he returned to his native country, and undertook the care of an academy at Dublin. Scarcely had he fixed himself in that city, when his accomplishments and talents attracted the general notice of persons of all ranks who had any taste for literature. Lord viscount Moleworth took much delight in his conversation, and is said to have assisted him with his criticisms and observations upon his "Enquiry into the Ideas of Beauty and Virtue," before it was committed to the press. He received a similar favour from Dr. Syngé, lord bishop of Elphin, with whom he lived in habits of great friendship. The first edition of this work made its appearance anonymously, but its great merit did not suffer the author to remain long concealed. Lord Granville, the lord lieutenant, sent his secretary to enquire at the booksellers for the author, and when he could not learn his name, he left a letter to be conveyed to him, in consequence of which he soon became acquainted with his excellency, and was ever after treated by him with distinguished marks of familiarity and esteem. From this time his acquaintance began to be still more courted by men of distinction, either for station or literature; among these was the celebrated archbishop King, who screened him from two attempts made to prosecute him, for venturing to take upon himself the education of youth without having first subscribed the ecclesiastical canons. In the year 1728, Mr. Hutcheson published "A Treatise on the Passions." Having conducted his private academy in Dublin for several years with reputation and success, he was invited into Scotland in 1729, to fill the chair of philosophy in the university of Glasgow. Here he spent the remainder of his life, in a manner highly honourable to himself and useful to the university of which he was a member. About this time the degree of doctor of laws was conferred upon him. At Glasgow his time was divided between his studies and the duties of his office. He was in every respect a valuable member of the university, his abilities qualifying him, and his zeal prompting him, on all occasions, to promote its civil and literary interests. His constitution seemed to promise his friends a long enjoyment of his valuable life, but a sudden attack terminated it in 1747, in the 53d year of his age. His son published, from the original MS. of his father, a "System of Moral Philosophy," in 2 vols. 4to. In this work the author endeavours to unfold the principles of the human mind, as united in a moral constitution, and from thence to point out the origin of our ideas of moral good and evil, and of our sense of duty, or moral obligation; he next enquires what must be the supreme happiness of a spe-

cies constituted as mankind are, after which he deduces the particular laws of nature, or rules necessary to be observed for promoting the general good in our common intercourse with one another as members of society. Dr. Hutcheson was of that class of philosophers, who deduce all moral ideas from what they call a moral sense, implanted in our natures, or an instinct like that of self preservation, which, independently of any arguments taken from the reasonableness and advantages of any action, leads us to perform it ourselves, or to approve it when performed by others. This moral sense they maintain to be the very foundation of virtue. Dr. Hutcheson was a man of considerable and various learning. He was not only acquainted with those subjects most intimately acquainted with his profession, but was a good mathematician and natural philosopher; and was desirous of applying all his knowledge to the grand purpose of establishing the truths of the existence, the perfections and government of God.

HUTCHINS, JOHN, was born in 1698, at Bradford-Peverell, in Dorsetshire, and educated at Baliol-college, Oxford, for the church. He took orders, and was presented successively to different livings, the last of which was the rectory of the church of the Holy Trinity, at Wareham. He died in June 1773. He was author of the History and Antiquities of the County of Dorset, which he was nearly forty years in compiling, and which, though he lived to see it put to press, was not published till 1774, when it was given to the world for the benefit of his widow and children. It was comprized in two volumes folio, and is adorned with many plates contributed by the patrons of the work.

HUTCHINSONIANS in *Ecclesiastical History*, a kind of cabalistic sect, that sprung up in this country towards the beginning of the last century, and that derived its name from John Hutchinson, who was born in Yorkshire, A. D. 1674. Having been educated in his father's house, with a view to the office of steward to some gentleman or nobleman, he was advanced at an early period of life to this station in the service of the duke of Somerset; and his business calling him to London about the year 1700, he became acquainted with Dr. Woodward, who employed him in making that large and noble collection of fossils, &c. which the doctor bequeathed to the university of Cambridge. Mr. Hutchinson, being desirous of prosecuting his literary studies, begged leave to quit the service of the duke, who appointed him his riding-purveyor, with a fixed salary of 200*l.* per annum; and this place he enjoyed till his death in 1737. In 1724 he published the first part of his *Moses's Principia*, in which he ridiculed Dr. Woodward's Natural History of the Earth, and his account of the settlement of the several strata, shells, and nodules, by the law of gravity; attempting also, with no small degree of presumption, to refute and explode Newton's theory of gravitation; and from this time to his death he continued publishing a volume every year, or every other year; which, with the manuscripts left behind, were published in 1748, in twelve volumes octavo, by the Rev. Julius Bate, a strenuous advocate for his doctrine: an abstract of his works was also published in 1752. In 1712, Mr. Hutchinson completed a machine of the watch kind for the discovery of the longitude at sea, which is said to have been so contrived, that the spring, wheels, and pivots, &c. were not in any considerable degree influenced by heat, cold, moisture, and drought, and to be capable of that degree of exactness which is requisite for the purpose. Having obtained the testimonials of Newton, and some others to whom it was referred for examination, expressing their opinion of its excellence and utility, application was made for a parliamentary reward, but the author, exasperated at his disappointment,

relinquished his pursuits of this kind, and destroyed at his papers. In 1727 he published the second part of Moses's Principia, containing the principles, as he apprehends, of the scripture philosophy; which are, a plenum, and the air. The air he supposes to exist in three conditions, viz. fire, light, and spirit; the two latter are the finer and grosser parts of the air in motion; from the earth to the sun, the air is finer and finer, till it becomes pure light near the confines of the sun, and fire in the orb of the sun, or solar focus. From the earth, towards the circumference of this system, in which he includes the fixed stars, the air becomes grosser and grosser, till it becomes torpid and stagnant, in which condition it is at the utmost verge of this system; from whence, he says, the expression of "outer darkness, and blackness of darkness," used in the New Testament, seems to be taken. The sun, which he places in the centre, is the active vivifying agent, which, by melting the spirit or grosser parts of the air into atoms or finer parts, or æther, sets the machine forward and keeps it a-going; for the light is pressed out by the influx of spirit, and the spirit is pressed in by the efflux of light; and thus the whole matter of the heavens or air is perpetually changing conditions and circulating. In the introduction to this work, Mr. Hutchinson suggested, that the idea of the Trinity was to be taken from the three grand agents in the system of nature, fire, light, and spirit; which are three conditions of one and the same substance, and wonderfully answer in a typical or symbolical manner to the three persons of one and the same, essence. He also discovers the doctrine in the term *cherubim*, which is derived from *כ*, *sicut*, denoting *similitude* or *resemblance*, and *רביים*, plural of *רב*, a *great* or *mighty* one; and so the cherubim, i. e. the similitude of the great ones, were represented by a bull the chief of the tame animals, the lion the chief of the wild, and the eagle of the winged; and these were again figures of the celestial cherubim, or fire, light, and spirit. The bodies of these three animals were all joined in one, in order to signify the unity of the essence, and the distinction of the persons, and man taken into the essence by his personal union with the second person, whose constant emblem was the lion; and Mr. Hutchinson contends, that the very name of the figure was an hieroglyphical representation of the Trinity. The same doctrine is also taught by the word *שמים*, translated *heavens*; but which the Hutchinsonians suppose to signify *names*, being, as they say, the plural of *שם*, a *name*; and the heavens, according to them, are called names; because the material heaven, having in its one substance three conditions of fire, light, and spirit, is the proper name or representation of the Deity in its unity of essence, and trinity of persons; or of the *אלהים*, *Elohim*, or *Aleim*, which they derive from *אלה*, *alah*, an *oath*, or *conditional imprecation*, and therefore, must signify persons that have bound themselves by an indispensable obligation; hereby intimating that the three persons of the Godhead have absolutely covenanted together to redeem man. On this account the singular Jehovah, *g. d.* the essence-existing, is so commonly found in conjunction with the plural *Aleim*, i. e. the *confederates* or *adjutors*. They derive *אלה*, *Eloah*, also from the same root, and translate it the *accursed one*, referring to Christ, who was really made a curse for us. The word *ברית*, which we translate *covenant*, they derive from *ברר*, to *purify*, and render *purifier*; and thus *ברית*, which is commonly rendered to *make a covenant*, they translate to *cut off the purifier*. In this way Mr. Hutchinson and his followers have founded their whole system of theology and philosophy on a forced and fanciful etymology of Hebrew words; indulging their minds in all the wildness of imagination and unbounded whim, making

words signify what they please, turning the plainest history into sublime prophecy, and constraining sentences to be oracular in various ways, and meanings which they were never designed to bear, and which they are incapable of bearing. The scriptures, according to this author, written in Hebrew without points, which is the language framed in Paradise, and each root of which represents some obvious idea of action or condition, raised by the sensible object which it expresses, and farther designed to signify spiritual or mental things; the Hebrew scriptures, he says, rightly translated and understood, comprise a perfect system of natural philosophy, theology, and religion. Mr. Hutchinson expressly says, that as God was primarily represented by the heavens, so emblems or draughts of these, or descriptions in Hebrew words, were no more than copies of the archetype; and thus the knowledge of the *Aleim* is derived from the light of nature, not as that phrase is vulgarly understood, by any innate or inbred power in man, but by the immediate instruction of the Most High, the alone Interpreter as well the Lord of nature. The Greek, he says, that language of erring heathens, became of necessary use to the apostles, to spread the history of facts, which it behoved all men to be apprized of; but Christ and his disciples knew too well its imperfection and unfitness to give just ideas of the divine economy to make use of it for that purpose. The original scriptures in Hebrew were distinct permanent evidence; to these references are always made, and there complete satisfaction is to be found. He also observes, that as the material machine is primarily suited to the service of the body, so its secondary, but most important use, is to treasure up ideas for the immortal soul, by affording types and evidences of the otherwise unutterable attributes of the Deity. Hence it must follow, that the language of scripture, which is admirably adapted to convey true and literal descriptions, will also in many places require an emblematical or spiritual interpretation, corresponding to the circumstances of that creature who has a *soul* of *luxes* to provide for. The Hutchinsonians not only erect their fanciful system of theological and philosophical opinions on the construction of roots and symbols, to the ruin of natural religion and morality, but they loudly declaim against human learning and reason; and they expressly call abstract reasoning the very province of the devil.

The reader may find a distinct and comprehensive account of the Hutchinsonian system in a book, entitled "Thoughts concerning Religion, &c." printed at Edinburgh, 1743; and in a Letter to a Bishop, annexed to it, first printed in 1732.

It is not improbable that Mr. Hutchinson's death was hastened by too intense an application to his studies; for neglecting his usual summer excursion in 1737, in order to complete a work which he was preparing for the press, he became unable to resist the attack of a bilious fever, to which he fell a sacrifice, notwithstanding the advice of sir Edward Wilmot and Dr. Mead, in the 63d year of his age. His judgment seems to have been much inferior to his learning, and his temper appears from the tenor of some of his publications to have been irritable and dogmatical.

HUTKA, in *Geography*, a town of Hungary; 12 miles S.S.E. of Caschau.

HUTOW, a town of Lithuania, in the palatinate of Brzesc; 28 miles W.S.W. of Pinsk.

HUTTANY, a town of Hindoostan, in the country of Viliapour; 30 miles S.S.W. of Viliapour. N. lat. 17° 5'. E. long. 75 6'.

HUTTEN, ULRIC DE, in *Biography*, one of the early reformers, was the son of a Franconian gentleman, and was born.

born in 1488. He studied at the university of Frankfort on the Oder, where he took the degree of M. A. Being destitute of patrimony, he entered into the army of the emperor in Italy, and was at the siege of Parma. He afterwards maintained himself by teaching at Roitock, and made himself known by some publications. At the command of his father he attempted to study the law, but finding the profession ill accord with his temper, he enlisted in the army again and served in Italy. He was a man of great courage, and in 1515, learning that his cousin John Hutten, marshal to the court of the duke of Wirtemberg, had been killed by that prince, he drew his pen in his kinsman's cause, and published some very severe harangues against the duke, which have been compared for eloquence and bitterness to Cicero's Catilinarian orations. After attacking the duke with his pen, he employed his arms against him in a war which drove him from his dominions. Having become a profelyte to the opinions of Luther, he published the bull of pope Leo X. against that reformer, with marginal remarks, in which he treated the holy pontiff with so little respect, that orders were transmitted from Rome to the elector of Mentz to send Hutten thither in fetters. He was on this occasion obliged to quit Mentz, but such was the vigour of his spirit, that he wrote a letter to the elector in which was the following passage: "If you burn my books, I will burn your towns." He afterwards wandered from place to place, and was at Basil in 1523, where the senate made him a considerable present. He received, however, the mortification of having his visit refused by Erasmus, then residing in that city. Hutten was indignant at this treatment, and wrote a book against Erasmus, which that learned man answered. Some farther quarrels drove him from Basil, and he took refuge in the isle of Uffnau, in the lake of Zurich, where he died in 1523, in the 36th year of his age. He was considered as a man of learning, and published various Latin works in prose and verse. He edited two new books of Livy, and discovered some MSS. of Pliny, Quintilian, and Marcellinus. Moreri.

HUTTER, ELIAS, was born at Ulric in 1553, and died at Nuremberg about the year 1603. He published an edition of the Hebrew Bible, entitled "Via Sancta, five Biblia sacra Hebraea Veteris Testamenti." At the end is given the 119th Psalm in thirty different languages. He also published two polyglots of the Bible; one at Hamburgh in 1596, in Hebrew, Greek, Latin, and German; and the other at Nuremberg in 1599; and in the following year he published a polyglot of the New Testament in twelve languages. Bayle.

HUTTING of GRAIN, the name of a practice employed in some places in the northern part of the kingdom, for preserving the corn in wet bad harvest-seasons. See HARVESTING.

HUTTWEIL, in *Geography*, a town of Switzerland, in the canton of Berne, on the frontiers of Lucerne; 22 miles N.W. of Lucerne.

HUTTYBARRY, a town of Bengal; 45 miles S. E. of Nattore.

HUXHAM, JOHN, in *Biography*, a physician of considerable reputation, who practised his profession at Plymouth, where he died in the year 1768. It is remarkable, that no biographical memoirs of this able and learned practitioner are extant. His writings display a most intimate acquaintance with the writings of the ancients, and a great veneration for those of Hippocrates in particular; and he quotes the ancient languages, and writes the Latin with great fluency and familiarity. He appears to have spent his life at Plymouth in the active exercise of his profession; for he kept

a register of the state of health and reigning diseases at that place, together with an account of the variety of the seasons, for nearly 30 years (namely, from the year 1724 to 1752 inclusive); which were published in Latin, under the title of "Observationes de Aëre et Morbis Epidemicis, &c." in 3 vols. 8vo. The first of these volumes commences with an account of the year 1728; but in the dedication to sir Hans Sloane, he refers to an account of the constitution and diseases of the seasons, from 1724 to 1727 already published. The third volume was edited in 1770, after the death of the author, by his son, J. Cor. Huxham, A.M. F.R.S.; who, it is to be regretted, did not insert any memoirs of his father's life.

Dr. Huxham was, at an early period, elected a member of the Royal Society, and communicated several papers on the subjects of pathology and morbid anatomy, which were published in the *Philosophical Transactions*. But the work upon which his reputation principally rests, is his "Essay on Fevers," published about the year 1739, of which a fifth edition appeared the year before his death, containing also "A Dissertation on the Malignant, Ulcerous Sore Throat." His accuracy and acuteness, as an observer of the phenomena of disease, were particularly exemplified in his discriminative history of the "Slow Nervous Fever;" to which his name is often annexed, when this fever is mentioned by succeeding authors. His theory was the ancient humoral pathology, which much influenced his practice; but that was the general fault of the age. He was the author of some "Observations on Antimony," 4to. 1756; and was elected a fellow of the Royal College of Physicians at Edinburgh. He has given few prescriptions in his works; for he observes, with Hippocrates, that the physician, who knows a disease, cannot be at a loss in respect to the form of his remedy; but, having mentioned a favourite formula for the preparation of a tincture of the Peruvian bark, in his *Essay on Fevers*, in which the bitter is corrected by aromatics, his name has become attached to the tincture of bark, which is commonly prepared in the shops according to his prescription, which is also adopted in the *Pharmacopœia* of the College of Physicians. See the works of Huxham.

HUXING of PIKE, among *Fishermen*, a particular method of catching that fish.

For this purpose, they take thirty or forty as large bladders as can be got; blow them up, and tie them close and strong; and at the mouth of each tie a line, longer or shorter, according to the depth of the water. At the end of the line is fastened an armed hook, artfully baited; and thus they are put into water with the advantage of the wind; that they may gently move up and down the pond. When a master pike has struck himself, it affords great entertainment to see him bounce about in the water with a bladder fastened to him; at last, when they perceive him almost spent, they take him up.

HUY, in *Geography*, a town of France, and principal place of a district in the department of the Ourte, situated on the Meuse, which divides it into two parts; 12 miles S.S.W. of Liege. N. lat. 50° 31'. E. long. 5° 15'. The place contains 4871, and the canton 10,674 inhabitants, on a territory of 110 kilometres, in 12 communes.

HUYGENS, CHRISTIAN, in *Biography*, was born at the Hague in the year 1629. He was educated chiefly under his father, and exhibited very rare talents at an early age. At thirteen years of age he was a good mathematician, and began to study mechanics, having discovered a marked genius for this branch of science by his great curiosity in examining different kinds of machines and pieces of mechanism. In the year 1645 he was sent to the university of Leyden to study

study law; but this pursuit did not prevent him from going on with his mathematical pursuits. At the end of one year he removed from Leyden to Breda, where an university had been recently founded, the direction of which was given to his father. In 1651 he published the first fruits of his studies, in a treatise entitled "Theoremata de Quadratura Hyperbolæ, Ellipsis, et Circuli, ex dato Portionum Gravitatis Centro, &c." and in 1654 he gave the world another work, "De circuli magnitudine inventa: accedunt Problematum quorundam illustris Constructiones." In the following year he was admitted to the degree of doctor of laws at Angers. In 1657, Dr. Huygens published a short piece, entitled "De Ratiociniis in Ludo Alæ," annexed to a mathematical work of professor Schooten's, in order to shew the usefulness of algebra. In the same year he printed his "Brevis Institutio de Ufu Horologiorum ad inveniendas Longitudines." An attempt was made to deprive him of the honour of the discovery, which obliged him to publish another piece to shew that his pendulum was very different from that invented by Galileo. This philosopher, in the course of his observations on the planet Saturn, had discovered what he imagined to be two satellites, almost in contact with his body, which some time after disappeared. Huygens, being desirous to account for these appearances and changes, applied himself to the improvement of the telescope, and he constructed one possessing a higher power than any which had been before invented. With this he discovered the ring, and he ascertained that the appearances which Galileo had taken for satellites were only Anseæ, or the extreme parts of the ring. He also discovered a satellite belonging to that planet which had never been seen before. These discoveries he communicated to the world in a work entitled "Systema Saturninum sive de Causis mirandorum Saturni Phænomenon, et Comite ejus Planetâ novo." In the year 1660 he came to England, where he communicated his art of polishing glasses for telescopes, and was admitted a member of the Royal Society. Here he made considerable improvements in the air-pump, and discovered the laws of the collision of elastic bodies. In 1663 he was invited by the minister Colbert to settle at Paris; the offer of a handsome pension in the king's name induced him to accede to the minister's proposal, and he resided at Paris from 1666 to 1681, where he was admitted a member of the Academy of Sciences. In 1673 he published "Horologium Oscillatorium; sive de motu Pendulorum ad horologia aptato, Demonstrationes Geometricæ;" discovering a method of rendering clocks exact, by applying the pendulum, and of rendering all its vibrations equal by the cycloid. In consequence of the revocation of the edict of Nantes he determined to leave France, though every effort was made to prevail upon him to remain there. Nothing he said should induce him to live in a country where his religion was proscribed, and its professors harassed by the most cruel persecutions. He accordingly quitted Paris, and returned to Holland, where he spent the remainder of his life in scientific pursuits and employments. His last work, and which he did not live to see through the press, was a tract on the plurality of worlds, and the probability that the planets are inhabited. Huygens died in 1695, when he was in the 67th year of his age. He was, unquestionably, one of the ablest mathematicians of the age. His temper was cheerful, his manners amiable, and he was in all respects a good man. Many of his works were published after his death. Moreri.

This great mathematician seems to have been as well acquainted with practical music, as the philosophy of sound. Dr. Smith, in his Harmonics, quotes his authority for an

observation which could only be made by a very nice and practised ear.

M. Huygens observed long ago, "that no single voice, or perfect instrument, can always proceed by perfect intervals, without erring from the pitch at first assumed; as in singing the sounds in the base C, F, D, G, C, the voice would sink insensibly so much, that the last C would be considerably lower than the first."

Because of those perfect intervals, which are as 4 to 3, 5 to 6, 4 to 3, 2 to 3; an account is made in such a proportion, as 160 to 162, that is, as 80 to 81, which is what calculators call a comma. Cornthecoros, lib. i. p. 77.

This, says Dr. Smith, is also confirmed by what we are told of a monk, who found by subtracting all the ascents of the voice in a certain chant from all its descents, that the latter exceeded the former by two commas; so that if the ascents and descents were constantly made by perfect intervals, and the chant were repeated but four or five times, the final found, which in that chant should be the same as the initial, would fall about a whole tone below it.

We have always found ourselves, that voices, singing without an organ or instrumental accompaniment, gradually sink to a lower pitch than that in which they began. And in singing a ballad with many different stanzas to the same air, the depression is proportionably considerable. But Huygens has assigned a scientific reason for the descent. Dr. Smith frequently refers in his Harmonics to the *Cycclus harmonicus* of Huygens at the end of his works, or in l'Histoire des Ouvrages des Scavans, October, 1691.

HUYGENS, GOMARUS, was born at Liere, in the territory of Antwerp, in the year 1631. He was educated at the university of Louvain, where he was so much distinguished among his contemporaries, that he was appointed professor of philosophy when he was only twenty-one years of age. In 1668 he began to confine his studies solely to divinity, and in the same year was admitted doctor, and deputed to proceed to Rome, to defend the privileges of the university of Louvain before pope Clement X. Having succeeded in his object he returned to Louvain, where he was incessantly employed in his studies till the year 1677, when he was appointed president of the college by pope Adrian VI. In the year 1682, his Catholic majesty, without solicitation, bestowed on him a canonry of St. Peter, at Louvain. Soon after this he was involved in disputes with the Jesuits, and his enemies procured an interdict against him, by which he was prohibited the exercise of his functions as president, preacher, and confessor. Both parties appealed to the pope, who decided in favour of Huygens. A temporary peace was produced among the several combatants, during which Mr. H. died in 1702, at the age of 71. He was author of many theological works, among which are his "Breves Observaciones," which, notwithstanding the title, are extended to fifteen volumes, 12mo. Moreri.

HUYGENS'S *Temperament of the Musical Scale*. In his *Cycclus Harmonicus*, at the end of his works, and in l'Hist. des Ouvrages des Scavans, 1691, p. 78, M. Huygen's adopts a system of temperament of the musical scale, in which the octave is divided into 31 equal parts, whereof the mean tone is 5, and the major limma 3. Dr. Robert Smith, in his *Harmonics*, 2d edit. p. 158, calculates the temperaments of the Vth, IIIrd, and VIth in this system, and Mr. Farey has done the same in scholium 12 to his *Theorems*, Phil. Mag. vol. xxxvi. p. 52. where it appears, that the fifths in this system are each flattened 2.6518 Σ , each major third is sharpened .4006 Σ , and each major sixth is also sharpened 3.0524 Σ . At page 224, Dr. Smith gives the lengths of a monochord string for each of the 21 notes of this scale, for instruments with

with notes sufficient, and which will equally serve for tuning the common douzeave instruments, by taking the seven natural notes C, D, E, &c. and C ♯, E ♭, F ♯, G ♯ and B ♭ for the short keys of the instrument. And at page 207 he shews, that by help of the first table of beats in plate 20, answering to the pitch 262, (that being nearly $\frac{1}{4}$ th of a mean tone, or 24.71654 lower than our present CONCERT *pitch*, see that article); this system may be tuned, on common, or on more perfect instruments. In 1725 Ambrose Warren published a thin quarto, under the title of the "Tonometer," wherein he pretends to the discovery of this system of 31 intervals in the octave, but which he more probably took from our author, as Mr. Farey has remarked in the page of the Phil. Mag. above referred to.

HUYSMAN, or HOUSEMAN, CORNELIUS, in *Biography*, a painter, born at Antwerp in 1648. He studied the art under Gaspar de Wit, but seeing some of the works of Artois, he was so struck with them that he went to Brussels to place himself under him.

In some time he copied his manner, but afterwards adopted one of his own, yet retained somewhat of Artois, with a mixture of the taste of the Italian schools, and he is considered as one of the best landscape painters of the Flemish school. He died in 1727, aged 79.

HUYSUM, JOHN VAN. This illustrious painter hath surpassed all who have ever painted in that style; and his works excite as much surprise by their finishing, as they excite admiration by their truth.

He was born at Amsterdam in 1682, and was a disciple of Justus Van Huysum, his father. He set out in his profession with a most commendable principle, not so much to paint for the acquisition of money, as of fame; and therefore he did not aim at expedition, but at delicacy, and if possible, to arrive at perfection in his art. Having attentively studied the pictures of Mignon, and all other artists of distinction who had painted in his own style, he tried which manner would soonest lead him to imitate the lightness and singular beauties of each flower, fruit, or plant; and then fixed on a manner peculiar to himself, which seems almost inimitable. He soon received the most deserved applause from the ablest judges of painting; even those who furnished him with the loveliest flowers, confessing that there was somewhat in his colouring and pencilling that rendered every object more beautiful, if possible, than even nature itself. His pictures are finished with inconceivable truth; for he painted every thing after nature, and was so singularly exact, as to watch even the hour of the day in which his model appeared in its greatest perfection.

By the judicious he was accounted to paint with greater freedom than Mignon or Brueghel; with more tenderness and nature, than Mario da Fiori, Michael Angelo di Campidoglio, or Segers; with more mellowness than De Heem, and greater force of colouring than Baptist. His reputation rose to such a height at last, that he fixed immoderate prices on his works; so that none but princes, or those of princely fortunes, could pretend to become purchasers. Six of his paintings were sold, at a public sale in Holland, for prices that were almost incredible. One of them, a flower-piece, for fourteen hundred and fifty guilders; a fruit-piece, for a thousand and five guilders; and the smaller pictures for nine hundred.

The vast sums which Van Huysum received for his works, caused him to redouble his endeavours to excel; no person was admitted into his room while he was painting, not even his brothers; and his method of mixing the tints, and preserving the lustre of his colours, was an impenetrable secret which he never would disclose. Yet his conduct is certainly not to his honour; but rather an argument of a low mind,

fearful of being equalled or surpassed. From the same principle he would never take any disciples, except one lady, named Haverman, and he grew envious and jealous even of her merit.

By several domestic disquiets his temper became changed; he grew morose, fretful, and apt to withdraw himself from society. He had many enviers of his fame, which has ever been the severe lot of the most deserving in all professions; but he continued to work, and his reputation never diminished. It is universally agreed, that he has excelled all who have painted fruit and flowers before him, by the confessed superiority of his touch, by the delicacy of his pencil, and by an amazing manner of finishing; nor does it appear probable that any future artist will ever become his competitor. The care which he took to purify his oils, and prepare his colours, and the various experiments he made to discover the most lustrous and durable, is another instance of his extraordinary care and capacity.

From having observed some of his works that were perfectly finished, some only half finished, and others only begun, the principles by which he conducted himself may perhaps be discoverable. His cloths were prepared with the greatest care, and primed with white, with a l possible purity, to prevent his colours from being obscured, as he laid them on very lightly. He glazed all other colours, except the clear and transparent, not omitting even the white ones, till he found the exact tone of the colour; and over that he finished the forms, the lights, the shadows, and the reflections; which are all executed with precision and warmth, without dryness or negligence. The greatest truth, united with the greatest brilliancy, and a velvet softness on the surface of his objects, are visible in every part of his compositions; and as to his touch, it looks like the pencil of nature.

Whenever he represented flowers placed in vases, he always painted those vases after some elegant model, and the bas-relief is as exquisitely finished as any of the other parts. Through the whole he shews a delicate composition, a fine harmony, and a most happy effect of light and shadow. Those pictures which he painted on a clear ground, are preferred to others of his hand, as having greater lustre; and as they demanded more care and exactness in the finishing; yet there are some on a darkish ground, in which appears rather more force and harmony.

It is observed of him, that in the grouping of his flowers, he generally designed those which were brightest in the centre, and gradually decreased the force of his colour from the centre to the extremities. The birds' nests and their eggs, the feathers, insects, and drops of dew, are expressed with the utmost truth, so as even to deceive the spectator. And yet, after all this merited and just praise, it cannot but be confessed, that sometimes his fruits appear like wax or ivory, without that peculiar softness and warmth which is constantly observable in nature.

Beside his merit as a flower-painter, he also painted landscapes with great applause. They are well composed; and although he had never seen Rome, he adorned his scenes with the noble remains of ancient magnificence which are in that city. His pictures in that style are well coloured, and every tree is distinguished by a touch that is proper for the leasing. The grounds are well broken, and disposed with taste and judgment; the figures are designed in the manner of Laireffe, highly finished, and touched with a great deal of spirit; and through the whole composition, the scene represents Italy, in the trees, the clouds, and the skies. He died in 1749, aged 67. Pilkington's Dict.

HUZANKA,

HUZANKA, in *Geography*, a town of Lithuania, in the palatinate of Novogrodek; 36 miles S.E. of Novogrodek.

HUZZARD, in *Mining*, signifies ochry, foul, or bad; as huzzarded limestone in Derbyshire, is the ochry and cherty mixtures of stone found in the rocks where they skirt the veins, and in the stony lenticular masses, found in the veins called *Riders*, which see. Sometimes this kind of stone, unfit for lime-burning, is called ballard-limestone.

HWARF, in *Geography*, a town of Sweden, in West Gothland; 63 miles E. of Uddevalla.

HWEN, **HVEN**, or *Ween*, a fertile island of Sweden, to which country it was granted by the treaty of Roschild, in 1658, situated in the Sound, about 8160 paces in circuit, and having at a distance the appearance of a high mountain. This island was granted by Frederick II. king of Denmark, to Tycho Brahe (see **BRAHE**). The whole island contains but one parish, or village, with about 50 houses; 15 miles N. of Copenhagen. N. lat. 55° 54'. E. long. 12° 42'.

HWITTIS, a town of Sweden, in the government of Abo; 15 miles N. of Biorneborg.

HYACINTH, in *Botany*. See **HYACINTHUS**.

HYACINTH, *African blue umbellated*. See **CRINUM**.

HYACINTH, *Grape*. See **HYACINTHUS**.

HYACINTH, *Lily and Starry*. See **SCILLA**.

HYACINTH, *Tuberosa*. See **POLYANTHUS**.

HYACINTH, in *Natural History*. See **GEMS** and **ZIRCON**.

HYACINTHIA, in *Antiquity*, feasts held at Sparta in honour of Apollo, and in commemoration of his favourite Hyacinth.

This Hyacinth was the son of Amyclas, king of Sparta, and was beloved both by Apollo and Zephyrus. The youth shewing most inclination to the former; his rival grew jealous; and to be revenged, one day, as Apollo was playing at the discus, *i. e.* quoits, with Hyacinth, Zephyrus turned the direction of a quoit which Apollo had pitched, full upon the head of the unhappy Hyacinth, who fell down dead. Apollo then transformed him into a flower of the same name; and, as a farther token of respect, they say, commanded this feast. The Hyacinthia lasted three days; the first and third whereof were employed in bewailing the death of Hyacinth, and the second in feasting and rejoicing.

The persons who assisted at the ceremony were crowned with ivy: because, says Voslius, *De Idolol. lib. ii. cap. 14.* Bacchus and Apollo were the same person.

HYACINTHUS, in *Botany*, *ἵακινθος*, a name adopted from the ancient Greeks, who applied it to the flower supposed to have sprung from the blood of Hyacinthus, the favourite of Apollo, when accidentally slain. Great differences have arisen amongst commentators concerning the plant of the ancients, which we cannot presume to settle, but there seems no paramount authority for the present application of the name in question.—Linn. *Gen.* 170. Schreb. 225. Willd. *Sp. Pl.* v. 2. 166. Mart. *Mill. Dict.* v. 2. Ait. *Hort. Kew.* ed. 2. v. 2. 282. Juss. 52. Lamarck. *Illustr.* t. 238. Class and order, *Hexandria Monogynia*. Nat. Ord. *Coronaria*, Linn. *Asphodeli*, Juss.

Gen. Ch. *Cal.* none. *Cor.* of one petal, bell-shaped; its limb in six reflexed segments. Nectary three pores near the summit of the germen. *Stam.* Filaments six, awl-shaped, uniform, shorter than the corolla, inserted into the tube; anthers approaching each other. *Pist.* Germen superior, roundish, with three angles and three furrows; style simple, shorter than the corolla; stigma obtuse. *Peric.* Capsule roundish with three angles, of three cells and three valves. *Seeds* mostly two in each cell, roundish.

Ess. Ch. Corolla inferior, of one petal; tube swelling;

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limb regular, in six segments. Germen with three honey-bearing pores.

Obf. The tube of the corolla, and even its limb, varies so much in shape, that Tournefort, and recently Mr. Ker, in Curtis's Botanical Magazine, have divided this genus; their *Muscari*, separated from it, having a globular tube. In some species, as *H. romanus*, the limb is more deeply divided; but in *H. non scriptus* of Linnæus the corolla is actually of six petals, and we therefore presume this species is properly removed, in the *Fl. Brit.* and English Botany, t. 377, to *Scilla*. Considerable doubts have, moreover, arisen respecting the melliferous pores described by Linnæus upon the germen, which are certainly not discernible in every one of the species, but indeed they are to be seen at a particular period only in any.

Willdenow has thirteen species, of which *H. non scriptus* is a *Scilla*, as we have said, and *cernuus* also; but the loss of these may be supplied by two of the *Muscari* tribe from Desfontaines, *maritimus* and *parviflorus*.

Fair examples of the genus are the common garden Hyacinth, *H. orientalis*, whose numerous and gorgeous varieties are the delight of florists; see *Curt. Mag.* t. 937; and *H. amethystinus*, prettily figured in Redouté's *Liliacées*. t. 14.

H. Muscari, figured in *Curt. Mag.* t. 734, and Redouté *Lil.* t. 132, a native of the Levant, is hardy in our gardens, and valuable for its delicious musky scent, though not conspicuous for beauty, its flowers being of a dusky green.

H. racemosus, *Curt. Mag.* t. 122. *Engl. Bot.* t. 1931, the Starch Hyacinth, so called from the peculiar smell of its dark blue flowers, is wild or naturalized on walls or in sandy fields in England, flowering in May.

H. corymbosus, Linn. *Mant.* 223, is made a *Maffonia* by Mr. Ker, in *Curt. Mag.* t. 991, but we are at a loss to understand the reason of this measure, against which the habit strongly revolts.

HYACINTHUS, in *Gardening*, comprehends plants of the bulbous-rooted, flowering, perennial kind; of which the species principally cultivated are the eastern, or garden-hyacinth (*H. orientalis*); the common hyacinth or hare-bells (*H. non-scriptus*); the bending hyacinth (*H. cernuus*); the late-flowering hyacinth (*H. serotinus*); amethyst-coloured hyacinth (*H. amethystinus*); the musk hyacinth (*H. muscari*); the feathered hyacinth (*H. monstrosus*); the purple grape hyacinth (*H. comosus*); the blue grape hyacinth (*H. botryoides*); and the clustered grape hyacinth (*H. racemosus*).

The first species and varieties are the sorts that are the most usually raised, and esteemed by those engaged in the culture of flowers.

The varieties of this species are numerous; as those with single white flowers; with double white flowers; with red single and double flowers; with flesh-coloured single and double flowers; with blue single and double flowers; with purple blue-coloured single and double flowers; with yellow flowers; with double white flowers with red eyes or middles; with double white with purple eyes; with double white with flesh-coloured eyes; with double white with yellow eyes; with double agate blue; with double and single porcelain-blue; and with double and single violet-coloured flowers.

And besides, there are also a number of intermediate varieties which have been obtained from seed, and by which many new ones of the chief sorts just noticed are yearly produced; each being distinguished either by the name of the place where it was first raised, the person who raised it,

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or that of illustrious personages, such as great kings, generals, poets and historians, as well as gods and goddesses, &c.

The principal circumstances by which the properties of a good double hyacinth are known, are that the stem or stalk be tall, strong, and upright; the flowers or bells sufficiently numerous, each being suspended by a short strong peduncle, having a horizontal position; the whole presenting a compact pyramidal form, with the crown or uppermost flower perfectly erect: the flowers should be large and well filled with broad bold petals, appearing to the eye rather convex than flat or hollow; they should extend to about the middle of the scape or stalk. The plain colours should be clear and bright, strong ones being generally preferred to such as are pale, and those which are mixed should blend together in an elegant manner.

In the fifth sort most of the flowers have white stripes and edges; occasionally varying to pure white, and a fine pale red colour, with deeper coloured veins running along the three outer segments. It was formerly known to gardeners under the title of Coventry blue hyacinth.

The sixth species also affords varieties that have ash-coloured purple flowers on the lower part of the spike, but which are larger and have more of the purple cast than in that sort; and those on the upper yellow with a very grateful odour, and with very large yellow flowers.

The eighth sort, which is termed the two-coloured or tassel hyacinth by Mr. Curtis, has varieties with white and blue flowers.

This is esteemed more for its singularity than any beauty it displays.

The ninth species has likewise varieties with blue, with white, and with ash-coloured flowers.

Method of Culture.—The first of these sorts and varieties, are all increased by planting the off-sets from the roots, in the manner of other bulbous-rooted perennial plants; and by sowing the seed to produce new varieties of the flowers.

And they succeed best in a light soil, but will prosper in any common earth, particularly in moderate sandy ground, in a dry, open, sunny situation. These bulbs, if planted in strong or very moist land, are apt to rot in winter, or become diseased. Where, therefore, the soil of the flower-borders or beds is of a strong heavy quality, the part designed for hyacinths should have light materials incorporated with it, such as any light sandy earth, from the surface of some common or other place; drift sea-sand, or any upper sandy soil, or light earthy compost; and where the soil of the borders, &c. is of a very light, sharp, sandy nature, a portion of light, mellow, loamy earth and neat's dung, or well rotted dung of old hot-beds, should be mixed with it, which make a fine compost surface mould for the hyacinth, when blended and laid on long enough before for the dung to be converted into mouldy earth.

The ground should be well wrought over as a preparation for the plants, one spade deep at least, raising the bed or border a little above the general level to avoid moisture; and raking the surface as smooth and even as possible.

The florists mostly prepare a compost for their rare kinds of hyacinths, with light sandy loam, or any sandy earth from a pasture field, taking only the top spit, ten or twelve inches deep, adding about one-third, from the surface, to one of drift or sea-sand, and the same quantity of rotten neat's dung; mixing the whole in a heap ridge-ways, in some dry sunny exposure, to lie several months, or if a year or more the better it will be.

To the above materials some also add a quantity of rotten leaves of trees, thoroughly decayed tanner's bark, or any

perfectly rotten earthy wood, or rotten saw-dust; all of which together greatly improve the composition; but as these are not always readily obtained, the other compost is frequently used with success. With these composts a bed is prepared in the beginning of autumn, four feet wide and two deep, a cavity being dug out that width and depth, and filled up entirely with the composition, six inches above the common level, to allow for settling, leaving it a fortnight or a month to settle; when it is ready for the reception of the bulbs of the plants.

The custom with the curious in these plants, is never to plant the fine sorts two years together in the same bed or earth, without some previous renewal, as by planting them every year in a fresh bed, or fresh prepared compost, it greatly improves the size and beauty of the flowers.

The most proper season for planting them is either in October or the beginning of November; as those then planted shoot early in spring, and flower strong at their usual season; but those planted later in autumn, or continued out of the ground till January and February, for a late bloom, flower weaker and with inferior beauty; the principal part should always be planted in the autumnal season.

Where any of the common kinds are intended to be planted to adorn the open borders contiguous to the principal walks, or lawns near the habitation, to increase the variety in assemblage with other bulbous-rooted spring flowers, as early tulips, narcissuses, or anemones, ranunculuses, &c., they should be disposed towards the front, more or less in a varied order, in patches of three roots in each, three or four inches deep; and the patches may be from about one yard to three or four distance, letting them stand to take their chance, without any further care in their culture.

And in planting the fine double sorts, four or five rows may be planted on each bed lengthways, about nine inches distant in each row, and about four inches deep, either in drills the above depth, by dibble, or by bedding them in; and as soon as they are planted in either method, the surface of the bed should be raked smooth and even on the upper side.

The bulbs being thus planted, the choicest sorts should be protected in the beds occasionally, during winter, from severe frost. They may be readily protected by a covering of straw, or any kind of dry, strawy litter, three or four inches thick; or by arching the beds with hoops or rods, or with moveable arched frames of open-work, covered with mats, the coverings being immediately removed when not wanted. The same caution should be continued in the spring.

When the flower stems are advanced nearly to their full height, it is proper to support them, by placing a small stick, fifteen or eighteen inches long, close to each plant, being careful not to thrust it into the bulb, and to tie the stems neatly to each stick, by which the spikes of flowers will be preserved in an upright position.

When in bloom, the curious sorts may be preserved much longer in beauty, by being screened occasionally from the sun and rain, by an awning or umbrella of mats or canvas: they should, however, be shaded only from the mid-day sun, from about ten to three or four o'clock, and only from excessive rains and boisterous winds.

But when the flowers begin to fade, all coverings should be entirely removed, that the bulbs and increasing off-sets may derive all possible benefit from the free air, dews, &c. When the season for flowering is over, the bulbs should be taken up, which, in the florist's language, is called lifting the roots. The fine sorts should be taken up at this period to separate the off-sets for increase, as well as to benefit

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benefit the main bulbs, which will always flower stronger than such as are suffered to remain two or more years unremoved.

The proper time for this work is in summer, soon after they have done flowering, when their leaves begin to turn yellow, as then the bulbs have had their full growth for that season, and should by no means remain longer in the ground, as they will rot.

Dry weather should be chosen, and a trowel or small spade is proper for lifting them, taking them up one by one, and breaking off the stem within an inch or two of its origin; then laying them in an airy room, out of the mid-day sun, to dry off the grass moisture very gradually, and to ripen the bulbs to a due hardness, when they appear of a purplish tinge, otherwise they are apt to rot and be destroyed.

When the bulbs are properly hardened and ripened, they should be taken up and separated from any off-sets, well cleared from earth, loose skins, and fibres at bottom; then, after exposing them a few hours to the sun, put up in boxes singly or upon dry shelves out of the sun, to remain till the season for planting them again arrives.

All the off-sets appearing about the main bulbs at the lifting season, are to be carefully separated from them, either as soon as they are taken up, or after the bulbs have lain to ripen, being kept separate, and planted in the early autumn, in beds by themselves, in rows six inches asunder, and two or three deep, where they should remain a year or two; then be taken up at the proper lifting season in summer, and managed as the large blowing roots.

In raising these bulbs from seed, which is practised by the curious, to obtain new varieties, to increase their stock; from the time of sowing, it will be four or five years before the bulbs produce flowers: the seed ripens in the summer, which may easily be saved, by suffering some of the finest singles and half doubles to stand to ripen it in perfection. The proper season of sowing it is about the beginning of autumn, in which case the plants will appear in the following spring. It grows perfectly well in a bed or border of light earth in the open ground; but where only a small quantity is to be sown, it may be done in pots or boxes, and be thereby much more convenient to remove into different situations at different seasons, as there may be occasion. Whichever mode is adopted, light rich mould should constantly be chosen for the purpose, the surface being rendered perfectly even and smooth, and the seeds sown with regularity over it, and covered in to the depth of from an inch to an inch and a half. Where sown in pots or boxes, they should be plunged up to their brims in the mould, in some dry situation, and as the winter begins to set in, be removed either under the occasional protection of a hot-bed frame, or be covered with some light dry litter in frosty weather, but letting them be fully exposed whenever it is mild.

As soon as they first appear in the spring, with very small leaves, they should be kept perfectly free from weeds, and have a little fine mould sifted over them in the autumn in the beds, being protected in the winter season as before directed. When their leaves begin to decay in the second summer, the young bulbs should be taken up, and replanted in nursery beds, about the end of August or beginning of the following month, in small drills, two inches in depth, letting them be three or four inches apart. They may remain in this situation two years, only sifting over the surfaces of the beds about half an inch thickness of fine mould in the autumn, and giving them occasional protection by coverings or other means, during the winters. After this they are to be managed in the usual manner, being taken up at the gene-

ral lifting season, and planted out where they are to flower in the autumnal months.

All the other species are capable of being readily increased by planting out the off-sets in the method that has been already directed, as they each of them afford them in great plenty. They may be taken up every second or third year, at the time the leaves decay, and the off-sets be separated and managed in the same mode as has been directed for those of the first species.

Method of blowing the Bulbs in Water-Glasses, &c.—Bulbs of this sort may be brought to flower in the winter and early spring, by having them put in root-glasses filled with water, or in pots, or small light boxes filled with sand, or light dry sandy mould, in the beginning of the autumn, and depositing them in a warm room, green or hot-house. In all these situations they blow in a highly agreeable manner, and earlier or later in these different seasons, according to the periods at which the bulbs have been introduced and planted.

The sorts of bulbs commonly employed for glasses and pots, &c. are principally the varieties of the oriental kind, especially where they are to be blown in water. In providing these, care should be taken to select such bulbs as are perfectly sound and firm, having the root part at the bottom full, plump, and solid.

The glasses for this purpose are of the bottle kind, having straight upright bodies gradually narrowing towards the tops, where they terminate in wide concave mouths; capable of containing one root or bulb in each. They are usually sold at the glass-shops, feed-shops, and nurseries, at from about five to nine shillings the dozen. In using them they should be filled with soft clear water up to the necks, and a little way into the cavity of the mouths, one bulb being then placed in each glass, with the bottom or root part a little in the water, and the top upright, setting them in the window of a room which faces the sun, or upon a chimney-piece, or the shelves of a light room where there is a fire, as the growth of the bulbs is thus greatly promoted. And they soon put forth strong root-fibres into the water, and at the same time push out leaves and flower-buds at the tops, which advance in a regular manner to flowering, in their peculiar habits. It is necessary to renew the water occasionally, as it becomes foul, or affords a foetid smell, by discharging the old, and immediately filling up the glasses with such as is fresh, which is the whole of the trouble that is requisite in their management. As soon as the stalks and flower-spikes are advanced to a tolerable height, a neat small stick should be placed to each as a support to keep it in an upright direction.

But in order to have the bulbs in blow at the most early season, the glasses that contain them should be placed in a hot-house, or other forcing-house.

And by planting some bulbs in pots or neat boxes of light sandy earth, or pure sand, in the autumn, and putting them in a warm sitting room, green-house, &c. they will flower at an early period.

The bulbs in the glasses usually flower in about six, eight, or ten weeks, according to the warmth of the situation in which they are placed. And they generally continue in blow for three or four weeks.

Where bulbs of this sort are to be forced by fire or bark-heat, some middling small pots should be provided, or small, neat, oblong boxes, six inches in depth, filling them half way, or a little more, with light dry earth, or that of a sandy nature, or with sand, planting one, two, three, or more bulbs in each pot or box, according to the size of them, pressing the bottoms gently into the earth, and filling up with more earth or sand over the crown of the bulbs. After they have been thus planted, the pots or boxes

should be placed in the houses, &c. watering the bulbs moderately with soft water, when the earth appears dry. They soon come into blow in this way, and, when the flowering is over, and the stems and leaves are decayed, the old bulbs should be taken up, cleaned and dried; being afterwards planted out in the open ground to recover strength, and produce good effects in the future year.

These are all highly beautiful plants, that afford much ornament and variety in gardens and pleasure-grounds. The more hardy common sorts are proper in the borders, clumps, and other parts towards the fronts; and those of the double finer kinds, in beds, pots, glasses and boxes, to be set out for variety.

HYADES, ἤαδες, from ἕω, *to rain*, in *Astronomy*, are seven stars on the bull's head, famous among the poets for the bringing of rain.

The principal of them is in the bull's left eye, by the Arabs called Aldebaran. See TAURUS.

The poets feign them to have been the daughters of Atlas and Pleione; and we have the names of six of them, *viz.* Eudora, Ambrosia, Prodice, Coronis, Philito, and Poliso, others add a seventh, *viz.* Thione. Their brother Hyas being torn in pieces by a lioness, they wept his death with such vehemence, that the gods, in compassion to them, translated them into heaven, and placed them in the Bull's forehead; where, as they say, they continue to weep: this constellation being supposed to preface rain.

Others represent the Hyades as Bacchus's nurses, and the same with the Dodonides, who fearing the resentment of Juno, and flying from the cruelty of king Lycurgus, were translated by Jupiter into heaven.

It is probable that these pretended Hyades, a Greek term signifying rainy, were merely poetical personages, whose names were given to certain stars discovered by Atlas.

HYÆNÆ, or HIÆNÆ, in *Natural History*, a species of the canis, with a straight annulated tail, and the hairs of the neck long and erect; naked ears, and four toes on each foot. It has six cutting teeth, and two canine in each jaw: and between the tail, which is short, and the anus, a transverse orifice. The animal which is known to us by this name is a quadruped almost as large as a wolf, excepting that its legs are not so long; the hair of it is rough, and its skin spotted with divers colours. Hyænas were formerly produced at Rome in the public games, and they have been represented on some medals on account of their rarity. Spanheim, who had copies of it engraved from medals, describes it with the head of a mastiff, with short triangular ears, a lion's tail and feet, and hair spotted all over like a tyger's. It inhabits Asiatic Turkey, Syria, Persia, and Barbary.

Pliny's account of this animal is very fabulous. He says, that it changes its sex every year; and that from its eyes are taken precious stones, called *hyænia*. Aristotle and Ælian say, that it makes dogs dumb with its shadow; and that it imitates the speech of mankind in order to deceive them, and thus draw them out of their houses and devour them. The superstitious Arabs carefully bury the head when they kill a hyæna, lest it should be applied to magical purposes, as the neck was of old, by the Thessalian forcerers. Lucan. lib. vi. 672.

Busbequius, in his travels to Amasia, relates several particulars of this animal. He says, it is almost of the shape of a wolf, but not so tall; that its hair is like that of a wolf, except its being more bristly, and marked at certain distances with great black spots; it has no neck, but its head is fastened to the vertebræ of the back, so that it is forced to turn itself quite round, whenever it would look behind. It is very cruel and voracious; it drags dead

bodies out of graves, and carries them to its den. It also preys on the herds and flocks. It is said to imitate the voice of a man, and that by this means it often deceives travellers. It is a solitary unfociable animal, and inhabits the chafms of rocks. These animals have a most malevolent aspect; and they are in their nature cruel, fierce, and untameable.

HYÆNÆ, *fossil remains of*. M. Cuvier, in his Report to the National Institute of France, of the Transactions of the Physical and Mathematical Class in 1806, mentions, that the bones of hyænas have been found in a great number of caverns in the mountains of Hungary and Germany, in company with the skeletons of tigers, bears, and other animals of unknown species: they are also found in loose recent alluvial soils, in some vallies, he says, in the Report for 1809. Phil. Mag. vol. 35. p. 388.

HYÆNIUS LAPIS, the name of a stone said to be found in the eyes of the hyæna. Pliny tells us, that these creatures were anciently hunted and destroyed for the sake of these stones, and that it was supposed they communicated the gift of prophecy, on being put under the tongue.

HYAGNIS, in *Greek Mythology*, the Oxford marbles tell us, was of Celene, and according to Alexander, cited by Plutarch in his Dialogues, he was the most ancient performer on the flute in Greece.

He was contemporary with Erichon, 1506 years B. C., who instituted the Panathenæan games at Athens. He was said to be the author of the nomes consecrated to Cybele, to Bacchus, to Pan, and to many other divinities.

He added a sixth string to the lyre of Mercury. Some make him the inventor of the Phrygian mode, and double flute. He was the father of Marfyas, according to Plutarch and Nonnus. Apuleius says, that he brought the flute to its highest perfection.

HYALE, in *Mythology*, one of the nymphs of Diana.

HYALINÆ, in *Natural History*, derived from ἕαλα, *glass*, the name of a genus of fossils, of the class of the talcs, the characters of which are, that they are composed of separate plates, of considerable thickness, and those not fissile into any thinner.

There is but one species known of this genus, which is found lodged in the clay, in the steep banks of the river Aube in Champagne, near the town of Bar, and in some other places along that river; but so far as is yet known, in no other part of the world.

HYALINGE, in *Geography*, a town of Sweden, in the province of Bleckingen; 20 miles S. S. E. of Konfsbeck.

HYALITE, in *Mineralogy*, occurs in wacke, in reniform masses, and is chiefly found at Frankfort on the Mayne. It has a considerable resemblance to gum, and is nearly allied to opal. The masses are usually much cracked. Its colour is yellowish and greyish-white, and it occurs in thin crusts on other minerals. Externally and internally it is shining, and its lustre is vitreous. The fracture is small and flat conchoidal. The fragments are indeterminately angular, and sharp edged. It is translucent, passing to semi-transparent. It is intermediate between the hard and semi-hard: is brittle and frangible. The specific gravity is 2.11. It is infusible at 150° of Wedgwood, but yields to soda. Jameson's Min. Thomson's Chemistry.

HYALOIDES, in the *Natural History of the Ancients*, the name of a transparent stone fit to engrave seals on, which was the great use they made of the gems, and very bright and readily reflecting the images of things. We have this stone to this day in many parts of America, particularly about the river of the Amazons, from whence many fair stones of it have at times been brought, and have been by
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some mistaken for diamonds; they are a sort of pebble crystal, approaching to what the jewellers call the white sapphire. Hill's Theophrast. p. 80.

HYALOIDES, from ὑάλος, *glass*, in *Anatomy*, is sometimes applied to the vitreous humour of the eye, contained betwixt the tunica retina, and the uvea.

HYANCIHE, a word used by the old medicinal writers to signify a quinsy, attended with a swelling on each side of the throat.

HYARON, in *Geography*, a small island in the Grecian Archipelago, near the coast of the Morea, between the gulf of Napoli and the gulf of Engia.

HYAT, a town of Hindoostan, in the circar of Sollapour; 12 miles E. N. E. of Sollapour.

HYATNAGUR, a town of Hindoostan, in Bengal; 18 miles N.W. of Mauldah.

HYBERNICUS LAPIS. See *Iris* SLATE.

HYBLA, in *Ancient Geography*, a town of Sicily; of which Stephanus gives an account, distinguishing three places of this name under the appellations of *major*, *minor*, and *parva*. The first, or *Hybla major*, was situated near and south of mount Ætna. Pausanias, in his "Eliac," l. i. c. 25, says, that it was situated in the territory of Catania, and entirely depopulated. Avola, 16 miles from Syracuse, which formerly stood on a hill, boasts of having been the *Hybla major*, so celebrated for its honey: but to this title so many places lay claim, that it is not easy to decide on the subject. See **AVOLA**, **MELILLI**, and **PATERNO**. *Hybla minor*, or *minima*, called also *Heræa*, was situated in the southern part of Sicily; and is placed in the Itinerary of Antonine on the route from Agrigentum to Syracuse. This is now "Calata-Girone." *Hybla parva* was a maritime town of Sicily, on the eastern coast. It was also denominated *Galaotis*, and more frequently *Megara*, from which the gulf, to the south of which it was situated, was called "Megarensis sinus."

HYBLA, *Mount*. See **MELILLI**.

HYBLÆANUM BITUMEN. See **BITUMEN**.

HYBOMA, a word used by the old surgical writers for a gibbosity of the spine.

HYBRISTICA, of ὑβρις, *injury*, in *Antiquity*, a solemn feast held among the Greeks, with sacrifices, and other ceremonies; at which the men attended in the apparel of women, and the women in that of men, to do honour to Venus in quality either of a god, or a goddess, or both. Or, according to the account given by others, the *hybristica* was a feast celebrated at Argos, wherein the women, being dressed like men, insulted their husbands, and treated them with all marks of superiority, in memory of the Argian dames having anciently defended their country with singular courage against Cleomenes and Demaratus.

Plutarch speaks of this feast in his treatise of the great actions of women. The name, he observes, signifies *infamy*; which is well accommodated to the occasion, wherein the women strutted about in men's clothes, while the men were obliged to dangle in petticoats.

HYDAGE. See **HIDAGE**.

HYDARTHURUS, in *Surgery*, signifies the disease of the joints, better known by the name of white-swelling. The term is derived from ὑδωρ, *water*, and ἀρθρον, *a joint*.

HYDASPES. See **BEHUT**.

HYDATID, ὑδατις, in *Medicine*, from ὑδωρ, *water*, in the genitive case, ὑδατος, literally a *vesicle* containing a watery or transparent fluid, denotes certain spherical bodies, which are found occasionally in man, as well as in other animals, lodged in, or adhering to, the different viscera.

The term *hydatid* has been applied to *two species* of vesic-

cular bodies, which appear to differ very materially in their nature: one of these, which, in the human subject, is commonly found adhering to the liver, spleen, or mesentery, and appears to have no farther connection with the body, than as it furnishes a nidus, is commonly supposed to be of an animal nature, and to possess an independent vitality: the other species, which is found attached to the kidneys, uterus, ovaries, or placenta, is considered as dependent on a mere morbid alteration of the structure of these parts. The first of these may be called the *true*, the second the *spurious* hydatid, for the sake of distinction; although at present we cannot consider the nature of either variety as satisfactorily ascertained, or the appellations as strictly correct.

1. *Of the true Hydatid*. The first authors, who described the hydatids accurately, and observed that they possessed the power of motion, were Phil. Jac. Hartmannus, who published his discovery in the year 1685 (see *Miscell. Natur. Curios. Dec. 2, Ann. 4.*); and Dr. Tyfon, whose account was printed in the *Philosophical Transactions* for the year 1692, and who appears to have been unacquainted with Hartmann's observations. Tyfon, who described and figured the hydatid, as found in sheep, observed the neck and mouth of the animal, and saw them in motion; Hartmann farther saw the whole body in motion, by putting them into warm water. Professor Pallas afterwards examined them very minutely, and finding their heads of the same structure as that of the *tænia*, or tape-worm, he gave them the name of *tænia hydatigena*. (See his *Miscellanea Zoologica*.) The abbé Fontana also observed them in sheep, saw the young ones adhering to the sides of the parent bag, and also with a microscope examined the heads of them, and found them resembling those of *tæniæ*. (*Opuscoli Scelti*, tom. 6.) Dr. Baillie says, "there is no doubt at all, that the hydatids in the livers of sheep are animalcules: they have been seen to move when taken out of the liver, and put into warm water; and they retain this power of motion for a good many hours after a sheep has been killed." (*Morbid Anatomy*, p. 224. ed. 2d.) The late Dr. John Hunter gave the following account of some hydatids, that were found in the abdomen of a sheep, adhering to the fat about the kidneys, and to the liver, in considerable number.

"The hydatids in the sheep were exactly the same with those described by Tyfon. They consist of a mouth, neck, and oblong spherical body. The mouth had nothing of the cruciform appearance, if I may be allowed the expression, that late writers have made the characteristic mark of *tænia*, and which they say is to be found in all hydatids. The mouth, examined with some care with the microscope, appeared to be a simple longitudinal aperture. The neck was composed of rings, and there appeared very fine circles surrounding the body. They varied in size, from that of a chefnut to the dimensions of a turkey's egg. When put in warm water, though it must have been twelve or fourteen hours after the sheep had been killed, they moved briskly, with a kind of peristaltic motion all over the body. Each hydatid was lodged in a separate sac, which was little more than sufficient to hold it, for the neck was reflected upon the body. The sides of the sac were lubricated with a mucous fluid." See *Transactions of a Society for the Improvement of Med. and Chirurg. Knowledge*, vol. i. p. 50.

Hydatids are also found in the *brain* of sheep, in which case they produce the disease, called, in some parts of the country "*the staggers*." The hydatid is lodged in the substance of the brain; in one sheep there were two hydatids, one in each hemisphere of the brain; they were of an irregular oval shape, they had no mouth; their coats had the same appearance as in the hydatids found in the abdomen; and,

and, when put in warm water, they had a strong peristaltic motion. In some there were clusters of young ones adhering to their inner coats. These were somewhat oval in their shape, and adhered by one end; but on detaching them carefully, and examining them with good magnifiers, I could never find the cruciform mouth described by some writers." Dr. Hunter, loc. cit.

The hydatids, found in, or attached to, the liver, in the human subject, bear a strong analogy to those of sheep above described; whence it is concluded, that they are most probably also animalcules. They have never been seen to move, indeed, when taken out of the body, and put into warm water; a circumstance which may be explained by the length of time which elapses after death, before the human body is examined; during which the hydatids must have lost their living principle. There is undoubtedly some difference between the hydatids in the liver of sheep, and in that of the human subject, in simplicity of organization, the hydatid in the human liver being a simple uniform bag, and the hydatid in that of the sheep having a neck and mouth appended to the bag. But "this difference," Dr. Baillie remarks, "need be no considerable objection to the opinion above stated: life may be conceived to be attached to the most simple form of organization. In proof of this, hydatids have been found in the brains of sheep, resembling almost exactly those in the human liver, and which have been seen to move, and therefore are certainly known to be animalcules." (Morbid Anat. p. 225.) In other respects, too, they bear a considerable analogy to each other.

The hydatids of the liver in man are commonly found inclosed in a cyst, which is frequently of considerable size, and is formed of very firm materials, so as to give to the touch almost the feeling of cartilage: it is endowed with a strong contractile power, so as forcibly to protrude its contents, through any opening made into it. It consists of two coats, the outer one of which is thick and laminated, the inner a soft and pulpy lining, like coagulable lymph. A cyst may contain one hydatid, or a greater number of them: they lie loose in the cavity, swimming in a fluid; or some of them are attached to the side of the cyst.

As to the structure of the hydatids themselves, they consist of a transparent, or semi-transparent bag, uniformly round and smooth, and contain a clear fluid capable of coagulation. The common colour of them is white, but they are occasionally seen of a light amber colour. The bag of the hydatid consists of two laminae, and possesses a good deal of contractile power. They are commonly unconnected with each other, or with the cyst which contains them; but sometimes they have been said to inclose each other in a series, like pill-boxes. On the inside of an hydatid smaller ones are sometimes found, which are commonly not larger than the heads of pins, but sometimes they are even larger in their size than a gooseberry. These are attached to the larger hydatid, either at scattered irregular distances, or so as to form small clusters; and they are also found floating loose in the liquor of the larger hydatids. Dr. Hunter observes, that when the young ones, growing in the coats of the larger ones, were examined with the microscope, they were found not to be set in the coats like pearls, but to be covered by a thin transparent membrane, so as to lie between two layers. The most common situation of hydatids of the liver is in its substance, and inclosed in a cyst; but they are occasionally attached to the outer surface of the liver, hanging from it, and occupying more or less of the general cavity of the abdomen.

There are many instances of hydatids, occurring in the

situation last mentioned, and terminating life, in consequence of the derangement produced by the prodigious pressure on the viscera, which they occasioned. In these cases, a large swelling of the abdomen takes place, yielding a distinct sensation of fluctuation, as in ascites, or abdominal dropsy, attended with emaciation of the limbs, difficulty of breathing, œdema of the legs, and other symptoms of impeded functions. In one case, related by Dr. Simmons, a cyst was found after death, of immense size, filled with hydatids of various sizes, and attached to the liver, omentum, mesentery, and peritoneum. It also penetrated the diaphragm, and then, expanding again, filled almost the whole of the left cavity of the thorax, adhering to the pleura and mediastinum. The upper part of this sac communicated in several places with the lungs, which were ulcerated; so that if the patient had lived long enough, she would probably have coughed up hydatids, as one of the openings from the cyst into the lungs was large enough to admit a goose-quill. In the substance of the liver, which weighed sixteen pounds and a half, another large cyst was found. This contained ten pints of hydatids, and sixteen pints had been taken out of the abdominal cyst before the part in the thorax was examined. (See Medical Communications, vol. 1. art. 5.) A similar case is related in the Edinburgh Medical and Surgical Journal, vol. 2. p. 170. in which "an immense cyst, occupying the whole cavity of the abdomen," was found after death, connected to the mesentery. It was distended to the utmost, and contained thirty-five pints of hydatids, many of them exceeding the largest oranges in size. In both these cases, the disease was supposed to be common ascites during life; and in both a fruitless attempt was made to draw off the fluid by tapping.

In the first of these histories, we have seen that a small communication actually existed between the sac of hydatids, and the cells of the lungs, although none of the hydatids had passed that way. But there are instances on record, in which the true hydatids were coughed up from the lungs. A lady of Lancaster, during an illness which continued more or less for three years, "coughed up several hundreds of hydatids, most of which were burst, and of these many must have been as large as a pullet's egg; those which were not burst, were only about the size of a nutmeg." (London Med. Journal, vol. 6. p. 293, for the year 1785.) This lady recovered her health; she had been considered as dropical, and having disease in the liver. Another lady, who had a tumour in the right hypochondrium, in which fluctuation was distinctly perceived, expectorated 135 hydatids in the course of four months, after which she began to amend. Med. Transactions of the Coll. of Physicians, vol. 2. art. 22.

In some cases these abdominal cysts form adhesions to, and communications with, the alimentary canal, through which the hydatids are discharged. A lady at Windsor was treated with mercurials, under the supposition that hepatitis, and consequent suppuration in the liver, had taken place. "In about ten days the mercury began to affect her mouth, and at the same time she voided an incredible quantity of the *tonia hydatigena*, or hydatides, by stool and by vomiting. Her attendants reckoned she passed to the number of a thousand; there being as many as filled two large chamber-pots. They were from the size of a small pea, to an inch and a half in diameter, &c." An hepatic abscess afterwards opened externally, a gall-stone was discharged from it, and she ultimately recovered. (Lond. Med. Journal, vol. 10. for 1789, p. 76.) An example of fatality occasioned by a sac of hydatids, situated in the *porta* of the liver, which, by its pressure on the vessels, produced complete obstruction and jaundice,

jaundice, is related by Dr. Duncan, sen. in the Ed. Med. and Surg. Journal, vol. 4. p. 187.

In a few instances, small hydatids, formed in the kidneys, have been discharged by urine; as in a case related by Dr. Baillie, who observes, that "sometimes the true hydatid is formed in the kidneys, having exactly the same nature with that which grows in the liver." (Morbid Anat. p. 279.) The hydatids, in this instance, differed much in size, from that of a small orange, to that of a pin's head: the smaller ones only were of course passed with the urine; but in consequence of the increased exertion, necessary to drive these through the urethra, the bladder had acquired a considerable thickness in its muscular coat, as in other cases of obstruction to the free passage of the urine. In a case related by Dr. John Hunter, death was occasioned by a collection of these hydatids, lodged between the bladder and *rectum*, filling the pelvis, and producing a fatal suppression of urine. Dr. Hunter puts the following query respecting the manner in which the hydatids came to be lodged in that situation. "It has been observed," he says, "that they are most commonly found in the liver and spleen, and in the present case their original seat would appear to have been in the last of these viscera: may not, however, one of the sacs or bags in the spleen have burst, by which the contents would be spread all over the abdomen, and from their own gravity would naturally fall into the pelvis; and may they not have adhered to the neighbouring parts, and so multiplied there?" See Trans. of a Society, &c. before quoted, vol. 1. p. 48.

Lastly, these hydatids are said to have been discharged from tumours in different parts of the body. See Philof. Trans. vol. 25.

Such are the situations in which the true hydatids have been observed to occur, and the modes in which they have eventually been discharged or have destroyed the patient. Dr. Hunter remarks, that of the various cases related by writers scarcely any proved fatal, when the hydatids found an outlet. But, however desirable it might, therefore, be to procure such an outlet, where the presence of hydatids is suspected, it is obvious that, as they are generally seated in the abdomen, art can seldom if ever interfere, and the business must be left entirely to nature.

2. The *spurious hydatids*, if that term be allowable, which are found connected with the kidneys, the placenta, the ovaries, and uterus, appear to differ greatly in their nature from the hydatids above described. They are not inclosed in firm cysts, nor exist without any attachment to each other, or the surrounding parts, nor do the larger ones contain others attached to their internal coats, or swimming in the fluid, as in the true hydatids. "Their coats are also thinner, and less pulpy, and not uncommonly they are almost as thin as any membrane of the body." It is, therefore, probable that they depend on a diseased alteration of the parts in which they are seated, and are not distinct organized simple animals. (Baillie Morb. Anat. p. 278.) The hydatid structure of the placenta is a disease not very uncommon, and usually occasions miscarriage; for when it takes place, Mr. Home has remarked, "the natural healthy actions for the support of the fœtus are so much impeded, that its growth is arrested. This evidently happened in a case published, with an engraving of the placenta and fœtus, by Dr. Denman: and when the patient does not early miscarry, the fœtus disappears; and in all the instances where miscarriage has taken place in a more advanced stage of the disease, I believe no fœtus has been found." (Mr. Home, in Trans. of a Soc. for the Improvement of Med. and Chir. Knowledge, vol. 2. p. 300.) The hydatids, in these cases, are commonly small, from the size of a pin's head, to that of a

large pea or common grape, are clustered together, and individually connected with the placenta, or with each other, by a narrow stalk or pedicle. Lieutaud has mentioned the circumstance of large masses of hydatids being found in the uterus. (Hist. Anat. Med. tom. 1. p. 335.) But it is probable, as Dr. Baillie suggests, that these were only hydatids of the placenta which had been retained there. Loc. cit. p. 379.

Hydatids are, perhaps, sometimes found connected with the ovary: but it is not improbable, as the same author remarks, that the cysts, in ovarial dropsy, have been occasionally confounded with the true hydatids, to which they bear some resemblance. They are, however, really very different. They have much firmer and less pulpy coats than hydatids; they contain a different kind of fluid; and they are differently connected among themselves: for they adhere to each other laterally by pretty broad surfaces; do not inclose each other; and appear to have no power analogous to generation, like hydatids, by which smaller cysts are formed, that are attached to others of a larger size. It appears not improbable, that these ovarial cysts are formed by a gradual enlargement of the small vesicles, which make a part of the natural structure of the ovary. (Baillie, p. 392.) See *Encysted Dropsy*.

HYDATIDES, ὑδατίδες, of ἕδα, for ἕδω, *water*, in *Natural History*, a name given by some writers to a species of alstroites, the lineations of which resemble waves. It is by others used as a name of the enhydros.

HYDATIS, in *Medicine*. See HYDATID.

HYDATIS, in *Zoology*. See TÆNIA.

HYDATISM, in *Surgery*, a word used by some writers to express the noise or found made by the fluctuating humours contained in abscesses.

HYDATOCHOLOS, of ἕδα, *water*, and χολή, *bile*, an epithet used by the old writers on medicine for stools more than ordinarily liquid or bilious.

HYDATOIDES, ὑδατοειδής, formed of ἕδα, ἕδωτος, *water*, and εἶδος, *form, resemblance*, a name some authors give to the aqueous humour of the eye, inclosed between the cornea and uvea.

HYDATOSCOPIA, compounded of ἕδωτος, the genitive of ἕδω, *water*, and σκοπεῖν, *I view, I consider*, called also *hydromancy*, a kind of divination, or method of foretelling future events, by means of water.

There is a natural or allowable kind of hydatoscopia: it consists in foretelling storms, tempests, hurricanes, &c. from natural signs or indications in the sea, air, clouds, &c.

HYDE, EDWARD, earl of Clarendon, in *Biography*, was born at Dinton, in Wiltshire, in February 1608. He was educated in the elements of learning, under his father's roof, by the vicar of the parish, and his progress was so great that he was deemed fit for the university at the age of thirteen. He was intended for the profession of the law, and was entered very early of the Middle Temple. Here he was under the protection of his uncle Nicholas Hyde, afterwards chief justice of the King's-bench. He had the happiness of being introduced early to a very respectable set of acquaintance, among whom were persons of the first rank for talents and learning in the kingdom, such as lord Falkland, Selden, Kenelm Digby, Carew, Waller, Sheldon, Hales of Eton, Chillingworth, &c. of whom he has, in his memoirs, given very characteristic and entertaining sketches. To their conversation and example he has ascribed much of his own greatness, and he has strongly expressed his sense of the benefit of such society, by saying that "he never was so proud, or thought himself so good a man, as when he was the worst man in company." He engaged in a cause on the

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the part of the merchants of London, which was the means of introducing him to the notice of archbishop Laud, then a commissioner of the treasury, who became very serviceable to him in his future professional advancement. His connections were the means of throwing a deal of business into his hands as a barrister, but he did not so immerse himself in legal pursuits as wholly to neglect polite literature, and by his manner of living, and the company which he kept, he seemed to affect the gentleman rather than the man of business. In the year 1640, on occasion of the Scotch rebellion, he was chosen burgess, and sat in parliament for Wootton-Basset. Almost as soon as he had taken his place in the house of commons, he brought forward a complaint of the illegal practices and oppressions of the earl marshal's court, but the speedy dissolution of the parliament prevented any proceedings upon it at that time. In the new house he sat for the borough of Saltash, and renewed, with so much effect, his attack upon the marshal's court, that he procured its suppression. He now laid aside his business at bar, and gave himself up entirely to the public concerns of the country, and being an independent gentleman, enlisted under the banners of no party, he was frequently appointed chairman of committees in matters of great importance. One of these, was that which drew up the charges against the judges for their decision in the case of ship-money. In this case he opposed the court, but at the same time shewed such an attachment to regal government, and to the established church, that he was regarded with suspicion by the heads of that party. The king was sensible of the obligations he was under to him, and took an opportunity of expressing his sense of gratitude for the services towards himself, and his regard for the national religion. Flattered, perhaps, by his sovereign's condescension, he was from this time looked upon as one of the royal party: he avows that "he had a very particular passion and devotion for the person of the king; and a most zealous esteem and reverence for the constitution of government, which he believed so equally poised, that if the least branch of the prerogative were torn off, the subject suffered by it, and he was as much troubled when the crown exceeded its just limits." When the commons' remonstrance on the state of the nation came out, Mr. Hyde, as he says, only to give vent to his own indignation, and without the least purpose of communicating it, drew up a reply, which, however, he shewed to lord Digby, and at length suffered it to appear as the king's answer with the advice of his council. Soon after this he was offered the place of solicitor-general, which he declined, but agreed to be one of a private consultation on the king's affairs and their management in parliament, with lord Falkland, and sir John Colepepper. In this office he stood apart from the others, by opposing the king's assent to the bill for depriving the bishops of their seat in the house of lords, which, however, his majesty was prevailed on to give. In April 1642, Mr. Hyde was sent for by the king to York; and repairing thither he assisted in drawing up many papers in the royal cause, and in private consultations. The parliament recalled him, but refusing to comply with their order he was exempted from pardon by a special vote. After the commencement of the civil war, Hyde was nominated to the chancellorship of the exchequer, sworn of the privy-council, and knighted. He remained with his majesty till March 1644, when he accompanied prince Charles into the West, and afterwards attended him to the island of Jersey. After the prince left the kingdom, sir Edward Hyde remained in the island two years longer, pursuing his studies in great tranquillity, and attending to the composition of a history of the transactions in which he had borne a conspicuous

part. In 1648 he was ordered to attend the prince at Paris. Upon his arrival he found great differences prevailing between the queen-mother, and the duke of York. The king's court at the Hague was not in a better state of union, and he found so little good to be done by a personal attendance, that he obtained leave to retire to Antwerp, where his wife and children were, with whom he lived in a studious and domestic retreat, and in a style suited to his reduced circumstances. After this he removed to Breda, at the desire of the prince of Orange, the late king's eldest daughter, who proposed to take his daughter as one of her maids of honour, to which, with much hesitation, he agreed. In 1657 he was appointed to the post of lord chancellor of England, which he very unwillingly accepted, properly judging that it was ridiculous, as the office proceeded from a king without a kingdom, but it appeared that Charles, not able of himself to reject the importunities of those who were continually applying to him for contingents, grants, and reversions, wished to throw the burden upon one who had firmness enough to refuse improper requests. At the Restoration, the chancellor might be considered as the king's first and most confidential minister; and it is agreed, that he displayed great wisdom and integrity in settling the many difficult affairs which this event brought for decision. He is particularly praised for rejecting the proposal of raising a great standing revenue, which would have made the king independent of future parliaments; and for the earnestness with which he proceeded to disband the army. He also moderated the forward zeal of the royalists, and checked their appetite for revenge. His honours naturally rose with his power, and in 1660 he was created a peer, and elected chancellor of the university of Oxford, and in the following year he was advanced to the titles of viscount Cornbury and earl of Clarendon. He also received various grants from the crown, which rendered his estate adequate to his dignity. A short time after the king's return, it was discovered that his daughter, at the prince of Orange's court, had attracted the notice of the duke of York, who, failing of success in an attempt to obtain her favours upon easy terms, had entered into a private contract of marriage with her. Lord Clarendon was excessively indignant at this transaction, and advised the king to send his daughter to the Tower, and bring her to condign punishment. The king, however, felt less keenly on the subject, and behaved with great justice and propriety in the business, though the duke basely denied his marriage, and even encouraged scandalous reports against his wife. The queen-mother also expressed the utmost rage at the connection, but she was nevertheless at length acknowledged as duchess of York, and eventually gave two queens to England. This marriage was made a step for alienating the king from his chancellor, and in 1663 the earl of Bristol exhibited various charges against him in the house of lords, which he was unable to substantiate, and which terminated greatly to the honour of the chancellor. Many other charges were brought against him; his opposition to a bill for liberty of conscience, and many of his public measures rendered him very unpopular: his admonitions of a corrupt prince alienated from him his sovereign's affection, so that, notwithstanding all his faithful services to the crown, he was, without reluctance, given up as a sacrifice to the national odium. In August 1667, he was required to resign the great seal, and was at the same time removed from all offices of public trust. He was afterwards impeached of high treason by the house of commons, but the lords refused to commit him upon their charge, and during the debates upon this head he received the king's commands to withdraw from the kingdom. Before his departure he sent an apology to the

house of peers, which was voted to be a libel, and burnt by the hands of the common hangman. A bill was now passed against him as a fugitive from justice. He landed at Calais, but received an order from the court of France to quit their territory instantly. A fit of illness rendered this impossible, and he finally obtained permission to reside in that country. He had nearly lost his life by an attack of some English seamen, with whom he was very unpopular; after this he proceeded to Montpellier, where he employed himself in writing a vindication of his conduct. He died at Rouen, in the month of December 1674. His body was brought to England and interred in Westminster-abbey. He left several children, of whom his eldest son succeeded him. Lord Clarendon was author of "Contemplations and Reflections on the Book of Psalms:" "A brief View of the Errors in Hobbes' Leviathan:" "The History of the grand Rebellion," in three volumes folio, to which was added his life, and a continuation of his history published in 1759, by the university of Oxford. This, his great work, is regarded as a valuable source of information on the events of that unhappy period. According to Mr. Hume, it is, excepting Whitelock's memorials, the most candid account of those times composed by any contemporary author. Clarendon, says the same historian, was always a friend to the liberty and constitution of his country. It is said that when he first engaged in the study of the law, his father exhorted him with great earnestness to shun the practice, too common in that profession, of straining every point in favour of prerogative, and perverting so useful a science to the oppression of liberty, and in the midst of these rational and virtuous counsels, which he reiterated, he was suddenly seized with an apoplexy, and expired in a few hours in his son's presence. As an historian, Clarendon will ever be esteemed as an entertaining writer, even independently of our curiosity to know the facts which he relates. He is more partial in appearance than in reality. He is less partial in his relation of facts than in his account of characters: he was too honest a man to falsify the former; his affections were easily capable, unknown to himself, of disguising the latter. "An air of probity and goodness," says Hume, "runs through the whole work, as these qualities did in reality embellish the whole life of the author." See Hume's Hist. vol. vii. octavo. Biog. Brit.

HYDE, THOMAS, a most profound Oriental scholar, who flourished in the seventeenth century, was born at Billingsley, near Bridgenorth, in Shropshire, in the year 1636. He received the elements of a learned education under his father's instructions, and at the age of sixteen he was entered of King's college, Cambridge. In the course of two years he was sent to London to the learned Walton, afterwards bishop of Chester, as a person very capable of assisting him in preparing for publication the grand polyglot bible, on which he was then engaged. Mr. Hyde rendered this undertaking the most essential services: he transcribed the Persian Pentateuch out of the Hebrew characters, in which it was first printed, at Constantinople, into the proper Persian characters. Of this Pentateuch, Mr. Hyde added a Latin translation; and he further assisted in correcting different parts of Walton's work, in the Arabic, Syriac, and Samaritan languages. In 1658 Mr. Hyde went to Oxford, and was admitted of the Queen's college, and soon afterwards appointed Hebrew reader in that society. Soon after the restoration of king Charles II. Mr. Hyde was made under-keeper of the Bodleian library, which furnished him with ample opportunities of prosecuting his favourite studies with singular advantage, and in 1665 he was elected to the office of head-keeper. In the same year he published "Verbo Latinae

Lingua Persica, et Commentarii in Observationes Ulug. Beigi, de Tabulis Longitudinis, et Latitudinis Stellarum fixarum." About the time when this version was published, Mr. Hyde became acquainted with the great Mr. Boyle, to whom he communicated several remarkable passages relating to chemistry, physics, and natural history, which he had collected from Oriental writers. In 1666 he was promoted to a prebend in the cathedral church of Salisbury, and in the following year he published "Quatuor Evangelia, et Acta Apostolorum, Lingua Malaicâ, Characteribus Europæis," printed at the expence of Mr. Boyle. In 1674 he gave the world "Catalogus impressorum Librorum Bibliothecæ Bodleianæ in Academia Oxon:" and in 1678 he was made archdeacon of Gloucester. Two years after this he was admitted to the degree of doctor of divinity, and from this period he was frequently giving additional proofs of his unremitting study, and singular skill in all kinds of Oriental learning. An account of his several learned works will be found in the Biographia Britannica, and also in a more abbreviated form in the General Biography. In 1697, Dr. Hyde was appointed regius professor of Hebrew, and canon of Christ-church. Shortly after this he published "the Religion of the ancient Persians." Dr. Hyde's profound skill in Oriental literature, and desire to promote it, would have led him to publish many more learned works than he did, could he have obtained encouragement from the public. The want of this obliged him to decline running the risk of printing any thing more, and on a similar account the writings which he left behind him were suffered to lie neglected, till it was too late to recover them, though the loss has ever since been regretted by the learned, and those who knew how to estimate their value. In 1701 Dr. Hyde resigned the office of head-keeper of the Bodleian library, on account of his great age and infirmities. During the reigns of Charles II., James II., and William III. he had occupied the post of interpreter and secretary in the Oriental languages; and in the course of his employment, had made himself most intimately acquainted with the policy, ceremonies, and customs of the Oriental nations. Dr. Hyde died in the year 1702, at his apartments in Christ-church, in the sixty-seventh year of his age. We shall transcribe the character of this great man as given by Granger: "Dr. Thomas Hyde," says he, "is a great character, but is much less known than he deserves to be, because the studies in which he was occupied are but little cultivated. Those that are acquainted with the Oriental languages, are astonished at the progress which was made in them by one man, though aided by the power of genius, supported and strengthened by incessant industry. There never was an Englishman, in his situation of life, who made so great a progress in the Chinese. Bochart, Pococke, and Hyde, are allowed to be the greatest Orientalists that any age or nation have produced. I am informed that Dr. Hyde's mind had been so much engrossed by his beloved studies, that he was but ill qualified to appear to any advantage in common conversation." Dr. Gregory Sharpe, master of the Temple, collected and republished some of his pieces which were formerly printed. These made their appearance in two volumes quarto, under the title of "Syntagma Dissertationum et Opuscula." Anthony Wood has preserved a catalogue of MSS. which Dr. Hyde had either completed, or in part prepared for the press. Biog. Brit.

HYDE, in *Geography*, a maritime county of America, in Newbern district, North Carolina, bounded E. by the ocean, W. by Beaufort county, N. by Tyrrel, and S. by Carteret, it contains 4783 inhabitants, of whom 1386 are slaves.

HYDE of Land. See HIDE.

HYDE-gild. See HIDE-gild.

HYDEPARK, in *Geography*, a township of America, in Orleans county, in Vermont; containing 110 inhabitants.

HYDER ALLY, in *Biography*, was a soldier of fortune in the East, and the son of a person who served in quality of a "killatar," or governor of a small fortrefs, to one of the kings of Myfore. He is said to have acquired the rudiments of war in the French camps; and in the year 1753, distinguished himself as their auxiliary, in the plains of Trichinopoly. About 10 years afterwards, being then at the head of the Myfore army, he dethroned his sovereign, and governed under the title of regent. Soon after, he extended his dominions on every side, the Carnatic excepted: the fine province of Bednore (or Biddanore) and the Patan nabobships of Cuddapah, Canoul, &c. besides some Mahratta provinces towards the river Kistnah, and the country of the Nairs, and other small states on the Malabar coast, were added to his original possessions; until at last he was at the head of a state, in extent equal to Great Britain, and producing a gross revenue of four millions sterling. The civil broils and revolutions in the western Mahratta state, particularly in latter times, allowed Hyder to aggrandize himself at its expence, but not without receiving some severe checks from that quarter. Before he had arrived at the height of his power, the war between him and the English broke out in 1767; nevertheless his power alarmed his neighbours, and a resolution was formed for attacking him. The Mahrattas under Maderow entered Hyder's country on the side towards Vifiapour; and the Nizam, joined by a detachment of British troops, moved from Hydrabad towards the frontier of Myfore, soon after. Hyder first contrived to buy off the Mahrattas with a large sum of money, and the restitution of some of the places which he had taken from them. He next negotiated with the Nizam, and succeeded not only in detaching him from the English, but in drawing him over to his party: so that the English detachment was compelled by necessity to retire to the Carnatic; on the frontiers of which their great army was now assembling. The superiority of the Nizam in the Carnatic had been always nominal; however, Hyder who now meditated the conquest of it, was glad to obtain from the Nizam a grant, or "fannud," for the nabobship of it; and from this time, at least, he considered Mahomed Ally as his rival. In the days of this last mentioned prince's distress, when he possessed only a small part of the Carnatic, he had engaged to cede the fortrefs of Trichinopoly, a most important post in the southern division of it, to the king of Myfore, for the assistance then afforded him; but this engagement never being performed, Hyder adopted the claims and resentments of the prince, of whose throne he had taken possession; and never lost sight of his title to Trichinopoly. In the war that immediately ensued, a strong detachment of the British army seized on Hyder's province of Coimbetore, a fertile district on the south of Myfore, and commanding a ready pass to Hyder's capital, Seringapatam. During the years 1767, 1768, and part of 1769, the war was continued with various success. (See HINDOOSTAN.) In 1771 Hyder suffered a total defeat from the Mahratta army within a few miles of his capital, into which he escaped with great difficulty, and after having sustained a great loss. Here, as his enemies had neither skill nor the ordinary requisites for a siege, he remained unmolested, and patiently waiting the retreat of his enemies after they had desolated the country. Some subsequent years of peace very much improved both his army and revenues; and the distractions that subsisted among the Mahrattas afforded him an opportunity of extending his territories at their expence. Hyder's projects of ambition were counteracted by two unsuccessful campaigns, in which he combated with the British troops under sir Eyre Coote; so that

in October 1782, he was reduced to the necessity of earnestly wishing for peace. Soon after Hyder died, and was succeeded by his son Tippoo. (See HINDOOSTAN.) Major Rennell, at the close of the short abstract which he has given in the introduction to his "Memoir" of the history of Hyder, subjoins the following outline of his character, which, as he conceives, has been little understood. "His military success, founded on the improvement of discipline; attention to merit of every kind; conciliation of the different tribes that served under his banners; contempt of state and ceremony, except what naturally arose from the dignity of his character, and his consequent economy in personal expences (the different habits of which form the chief distinction of what is called character among ordinary princes,) together with his minute attention to matters of finance, and the regular payment of his army:—all these together raised Hyder as far above the princes of Hindoostan, as the great qualities of the late Prussian monarch raised him above the generality of European princes; and hence I have ever considered Hyder as the FREDERIC of the East. Cruelty was the vice of Hyder; but we are to consider that Hyder's ideas of mercy were regulated by an Asiatic standard; and it is not improbable that he might rate his own character for moderation and clemency, as far above those of Tamerlane, Nadir Shah, and Abdallah, as he rated his discipline above theirs."

HYDERGUNGE, in *Geography*, a town of Hindoostan, in Oude; 21 miles W.N.W. of Fyzabad.

HYDERGUR, a town of Hindoostan, in Bednore; nine miles S.W. of Bednore.

HYDNOPHYLLUM, or **HYDNOPHYLLON**, in *Botany*, a name given by the ancient Greeks to a plant which they tell us grew on those places where the tubera or truffles lay underneath.

HYDNORA. See **APHYTEIA**.

HYDNUM, an ancient name adopted by Linnæus, but misapplied, as the *ὑδνιον* of Dioscorides, *ὑδνιον* of Theophrastus, so called from *ὑδεναι*, to swell, is the Truffle or *Tuber*.—Perfoon Syn. Fung. 554. Linn. Gen. 568. Syst. Veg. ed. 14. 978. Schreb. 769. Mart. Mill. Dict. v. 2. (Erinaceus; Dill. Giff. 188. Mich. t. 72.) Class and order, *Cryptogamia Fungi*. Nat. Ord. *Fungi*.

Ess. Ch. Cap turbinate; smooth above; echinated beneath with awl-shaped fibres.

Obs. These awl-shaped bodies which Linnæus compares to the prickles of a hedge-hog, are soft, solid, conical, or cylindrical substances, emitting seeds from every part of their surface. *Bulliard*.

This is a very extensive genus of *Fungi*, Perfoon in his Synopsis having described 26 species, most of which have been figured either by Sowerby, Bulliard, Jacquin, or Schrader.—Linnæus was acquainted with only six species of *Hydnum*. These plants are chiefly found in moist situations upon the decayed trunks of trees. It will be sufficient to enumerate a few of the most striking species.—*H. imbricatum*, Sowerb. Fung. t. 73, was communicated from lord Ongley's plantations in Bedfordshire. Its colour is a dusky yellow, having a reddish brown border.—*H. repandum*, t. 176, is found plentifully in Peckham and Hornley woods, during autumn. This is of a fine reddish buff colour, and very brittle in substance.—*H. Davisii*, t. 15, is a small yellow or brown fungus; when fresh of a pure white, more rare than beautiful, very similar in texture to *Boletus versicolor*, and was first discovered in Angelsea by the Rev. H. Davies.—*H. sublamellosum*, t. 112, of a delicate white colour, was sent from Bedfordshire by the Rev. Dr. Abbot.—*H. auriscalpium*, *Barba Jovis*, *coralloides*, *membranaceum*, and *ramosum*, less conspicuous species are also figured by the same author. *H. auriscalpium*, beautifully displayed

in Curt. Lond. fasc. 3, t. 68, is of a brownish colour and grows upon the cones of fir-trees. Curtis mentions it as an excellent example of this genus for the instruction of a young botanist.

Most *Hydra* are furnished with stems, but not all. *H. parasiticum* is the only Linnæan species that is stemless.

HYDRA, in *Astronomy*, a southern constellation, consisting of a number of stars, imagined to represent a water serpent. The stars in Hydra, in Ptolemy's Catalogue, are twenty-seven; in Tycho's, nineteen; in Hevelius's, thirty-one; and in the Britannic Catalogue, sixty. See **CONSTELLATION**.

HYDRA, in *Geography*, a small island in the Grecian Archipelago, about 10 miles long, and two broad. N. lat. 37° 20'. E. long. 23° 30'.—Also, a town of Africa, in the kingdom of Tunis, on the frontiers of Algiers, situated in a narrow valley, near a running stream and the site of extensive ruins; 90 miles E.S.E. of Constantina.

HYDRA of Lerna, in *Mythology*, a terrible monster, born of Typhon and Echidne, according to Hesiod; which was destroyed by Hercules. The poets represent it sometimes as a serpent, branched out into several other serpents, and sometimes with a human head, bearing serpents instead of hair; and they add, that when one of the serpents heads were cut off, a double head sprouted in its place.

This hydra with many heads is said to have been only a multitude of serpents, which infested the marshes of Lerna, near Mycenæ, and which seemed to multiply as they were destroyed. Hercules, with the assistance of his companions, cleared the country of them, by burning the reeds in which they lodged. See **HERCULES**.

HYDRA, in *Zoology*, a generic name of the polypes. See **POLYPE**.

HYDRA is also a synonymous name given by different authors to various animals, as, for instance, by Linnæus to *Tænia globosa*, by Bohadsch to *Holothuria tubulosa*, and again by Linnæus with the specific term of *glomerata* to *Coarallina pencillus*.

HYDRABAD, or **BAGNAGAR**, in *Geography*, a city of Hindoostan, and capital of a province, to which it gives name, now called *Golconda*, (which see,) is the present capital of the Nizams of the Deccan; who, since the dismemberment of their empire, have left Aurungabad, the ancient capital; which is not only in a corner of their dominions, but in that corner which lies near their hereditary enemy, the Poonah Mahrattas, and which is also the least defensible. Hydrabad was formerly only a palace of pleasure, and celebrated for the beauty of its gardens and delightfulness of its situation; but in the 16th century, the king of that period was induced, by the persuasion of one of his wives, to build a city, after whom he called it Bagnagar, or the gardens of Nagar. It is of large extent, surrounded with walls, and defended with towers; and is supposed to contain upwards of 100,000 inhabitants. The suburbs are extensive, and inhabited by merchants and tradesmen; 352 miles N.N.W. of Madras. N. lat. 17° 12'. E. long. 78° 51'.

Hydrabad is also the name of a fortress of Hindoostan, situated on the Indus, not far above the head of the Delta, and in the vicinity of Nasserpourey; the usual place of residence of the prince of Sindy.

HYDRACHNA, in *Entomology*, a genus of the apterous order, established by Müller, the character of which, as reduced by Gmelin to the arrangement of the "*Systema Naturæ*," consists in the head, thorax, and abdomen being united; the feelers jointed and two in number; the eyes either two, four, or six, and the legs eight.

Till within the space of the last few years, almost every

author, not excepting Linnæus and Geoffroy, have confounded the hydrachna with the acarus tribe; while, from their similarity of aspect, the globular form of the body, and the length of their feet, these insects were considered by general observers as no other than a race of spiders, to which the significant appellation of aquatic was most commonly annexed, because they inhabit watery places, and thus appear from their habits, though not in form, to constitute a distinct family from the true or terrestrial spiders. Both Roefel and Degeer have entered with a peculiar share of minuteness into the history of these animals; and it is more than probable the observations of these naturalists might furnish many very useful suggestions to the ingenious Müller, whose monograph on this curious race appeared in 1781. This conjecture is doubtless correct, but nevertheless the tract, or rather history, published under the title last mentioned, contains a fund of new and valuable information; it elucidates in a very comprehensive manner their internal as well as external conformation, and besides, condenses into one point of view a series of no less than fifty distinct species, the far greater part of which was totally unknown to any of his predecessors. These species are divided into three families, according to the number of eyes in each, which are either two, four, or six; those of the first division have the body of the male terminated in a kind of tail or elongated process.

After the publication of this useful work the genus hydrachna, as proposed by that author with some slight amendments or deviations, was embraced by the generality of naturalists, and still continues to be approved by the best authorities. Fabricius is indeed an exception; that excellent entomologist perhaps, without mature consideration, and certainly without affording us any reasonable grounds for believing he was so well acquainted with this tribe of creatures as Müller, rejects the genus altogether, and refers the few species he describes, which really belong to that tribe, to his genus *Trombidium*. Gmelin, on the contrary, differs from Fabricius in this respect, and adopts the genus together with its numerous species as described by Müller. The most material, and in our opinion the most able deviation from Müller, hitherto proposed, is that submitted by Latreille; this very assiduous and intelligent naturalist agrees with Müller in considering the hydrachna as a distinct natural family, but instead of allowing them to remain with the insect tribe in conformity with preceding writers, he referred them in the first instance to the crustacea, and since that time to the Arachnides, in which latter they constitute his family *Hydrachnelles*. The *Hydrachnellæ* of this writer are divided into three different genera, *eylais*, *hydrachna*, and *limnochare*; the first of which is furnished with mandibles, as we find exemplified in the Fabrician *Trombidium* extends. That to which the name of hydrachna is retained has no mandibles, and is furnished with a projecting siphon in the form of a beak, the feelers are advanced, and have a moveable appendage, and the body is of a globular figure: *Trombidium* geographicum of Fabricius is an illustrative example of this genus. The *limnochare* genus has no mandible; a siphon not at all, or very little projecting; feelers curved, without appendages, and the body depressed; the Linnæan *Acarus* aquaticus is of this genus.

The hydrachnæ, as we have before said, are vulgarly called water spiders; they are all of the aquatic kind, residing among plants that grow in the water, or in the banks of ditches, and other situations contiguous to their favourite element. When in the water they swim with great facility by means of their feet, which in most species, when attentively examined, appear ciliated, and admirably adapted for that purpose;

HYDRACHNA.

their skin is thick, and their body covered more or less with down, hair, or spines. The females are larger than the males, and often different in colour. In general their colours are remarkably bright, and possess a peculiar degree of brilliancy when seen in the water; the prevailing hues red or green, and silvery. They are excessively abundant in spring, and some of the species are almost constantly seen at that season of the year, on the surface of stagnant pools of water: they couple in the midst of summer, and deposit their eggs in clusters, chiefly among the weeds; these eggs are of a red colour, and at first spherical, but afterwards change to a semilunar form; the larvæ are furnished with six feet, and have a proboscis of very singular structure. The hydrachnæ prey upon the larvæ of the tipulæ and monoculi, and the juices of decayed vegetables, and are themselves the food of fishes, of many insects that reside in the water while in the state of larva, of polypes, and many of the larger kinds of aquatic worms.

Species.

* *Section. Eyes two; Body tailed.*

GLOBATOR. Globular; eyes red. Müll.

Abundant in ditches, and other stagnant waters; the male greenish spotted; female blueish, without spots, and twice the size of the male.

TABULATOR. Globular, yellowish, with spotted disk; tail cylindrical and equal. Müll.

Inhabits stagnant waters, and in some respects resembles the former.

BUCCINATOR. Obovate, red, behind black; tail cylindrical, yellow and narrow at the base. Müll. *Trombidium caudatum*, Fabr. *Acarus caudatus*, Degeer.

Lives in banks, the body beneath black; eyes reddish; legs black.

CUSPIDATOR. Brown, truncated before, and mucronated behind; tail depressed and bidentated. Müll.

Body depressed, and broader on the anterior part; behind narrow, and armed with an erect triangular spine; eyes black; legs pale. Lives in fish-ponds.

PUSTULATOR. Gibbous, red; tail depressed, with obtuse angles. Müll.

Body smooth, and generally covered with animalcules of the vorticella tribe. In grassy streams.

ALBATOR. Rounded, grey, with a white disk; tail depressed, and armed with three teeth. Müll. *Acarus globosus*, &c. Schrank. *Acarus fluviatilis*, Ströem.

Found in fish-ponds.

MACULATOR. Rounded, cinereous, spotted, and mucronate behind; tail depressed, and armed with three teeth. Müll.

In ditches; breast whitish; legs green.

TRICUSPIDATOR. Red, with a triple gibbosity on the back; tail depressed, and three-toothed. Müll.

The body is somewhat reticulated; breast blackish; feelers and legs whitish. Found in pools.

EMARGINATOR. Red, with the back gibbous; tail depressed and emarginate. Müll.

Feelers and legs greenish. Occurs in boggy situations.

SINUATOR. Grey; the back yellowish on the fore part, and tripunctated behind; tail depressed and sinuated. Müll.

Body reticulated; feelers and legs white. Found in stagnant waters.

INTEGRATOR. Green and without spots; tail depressed and entire. Müll.

Found in ditches; the body roundish oval, depressed, and contracted behind; breast yellowish; legs hyaline.

PAPILLATOR. Rounded, purple with an excrescence each side the tail; legs black.

Inhabits wet meadows.

** *Section. Eyes two, Body marked with a Fork.*

GROSSIPES. Nearly square, white, with three spots and a rufous fork; anterior legs thick.

Body pellucid and glabrous; legs twice as long as the body. Inhabits ditches.

CRASSIPES. Obovate; black, the disk black with a reddish fork; tail papillous; anterior legs thick. Müll.

Found in fish ponds and dykes; legs three or four times the length of the body; pellucid; breast whitish; eyes black.

GROSSIPES. Nearly square, white, with three spots and a rufous fork; anterior legs thick. Müll. Geoffr.

Inhabits fish-ponds; body glabrous; legs twice the length of the body.

CLAVICORNIS. Obovate, rufous with a yellow fork; feelers clavated; legs pale. Müll.

Found in ponds; the eyes black; legs and feelers white.

SPINIPES. Oval, greenish yellow, with eight dots and a rufous fork; legs spinous. Müll.

Inhabits pools. The body polished, with the eyes, breast, legs, and dots on the back black.

LONGICORNIS. Nearly square, white with five brown spots and a rufous fork; feelers long. Müll.

Frequents rivulets; pellucid; eyes black; breast pale yellow.

VERNALIS. Oval, greenish with a deeper disk, and rufous fork. Müll.

Inhabits overflown meadows; and has the appearance of a grey dot; the legs white.

LUNIPES. Oval, white, spotted, with a clear white fork; fourth joint of the posterior legs lunated. Müll.

Found in ditches, the body pellucid, with large eyes, and the legs and feelers pale.

TRIFURCALIS. Oval, whitish, with a brown back and triple silvery fork. Müll.

Frequents wet meadows; the feelers ending in a claw, and with the legs pale greenish white; eyes black; abdomen beneath, sometimes brown with a white line.

ORBICULARIS. Depressed, orbicular, pale yellow with black spots on the disk and a rufous fork. Müll.

Eyes black; legs white. This species occurs in rivers.

STELLARIS. Globular, blue, with a cinereous back and stellated fork. Müll. Subzer, &c.

In the banks of rivulets; the body of this kind is reticulated; and the legs somewhat longer than the body.

OVALIS. Ovate, compressed, greenish and flattish above, carinated and yellow brown beneath; feelers placed beneath. Müll.

Found in overflown meadows. Eyes and legs black.

ELLIPTICA. Rounded, blue with fulvous spots and dots. Müll. *Acarus maculatus aquaticus*, Degeer.

A scarce species found in rivers; eyes black; legs white, breast, tail, and posterior margin yellowish.

ORBICULATA. Depressed, orbicular, violet, with a white spot and circle. Müll.

Breast fulvous with the tip green; feelers and thighs whitish; eyes black. Inhabits muddy ditches.

LUGUBRIS. Globular, brownish, with black streaks; legs green. Müll.

In boggy places; eyes black; feelers green.

TRUNCATELLA. Grey, oblong, truncated behind, with dusky dots and lines. Müll.

Inhabits marshes; eyes black, feelers white.

*** Section. Eyes two; Body glabrous.

DESPICIENS. Rounded, red, with numerous spots; eyes placed beneath. Müll. *Araña aquatica*, Frisch.

Found in ditches; body slightly depressed, thick and wrinkled; eyes blackish; legs pale yellow.

GEOGRAPHICA. Spherical, black with four scarlet spots and dots. Müll. Roef., &c.

The largest and most beautiful of its genus; eyes, feelers, and last joint of its legs red. Inhabits ditches.

ABSTERGENS. Globular, red without spots; legs black. Müll. Roef., &c.

Inhabits stagnant waters; lines on the body beneath, with the eyes and legs black.

EXTENDENS. Rounded, red; hind legs contracted. Müll.

In ditches; body convex, and shining.

CRUENTA. Distended, red; legs equal. Müll. *Trombidium globosum*, Fabr. *Acarus aquaticus globosus*, Degeer.

Found in overflowed meadows; eyes red; feelers downy.

IMPRESSA. Distended, red, with impressed dots; feelers short. Müll. *Acarus aquaticus ruber*, Degeer. *Acarus holosericeus subglobosus aquaticus*, Schranck.

Found in marshes; a supposed variety has the feelers longer.

OVATA. Obovate, grey-brown, with a triangular fulvous spot; legs pale black. Müll.

Another analogous kind, an apparent variety of ovata, has the body marked with a fulvous cross, and the legs with the eyes and feelers black. Both are found in ditches.

LUNARIS. Oval, rufous, with a black lunate spot on the back. Müll.

Inhabits fish-ponds; the eyes are black, and the legs grey.

LILIACEA. Obovate and whitish, the disk lily-white, with a black spot each side. Müll.

The feelers, legs, and breast are pale, the latter spotted with black. This kind inhabits fens.

TORRIS. Oval, yellowish, with lateral black spots, and red in the middle; hind shanks lamellated. Müll.

Found in ditches, the eyes black, and legs white.

STRIGATA. Oblong, yellowish-green, the fore part depressed, with two blackish streaks united behind. Müll.

Near the banks of rivers; the eyes are black; feelers and legs white.

OBSOLETA. Rounded, reddish-brown, with a double obsolete streak behind the eyes. Müll.

Frequents the waters of woody situation; the eyes are black; feelers pellucid; and the legs pale-brownish.

NODATA. Red, truncated before, and spotted each side; posterior legs knotty. Müll.

Occurs in ditches; the eyes are black; feelers annulated; legs yellowish and longer than the body.

COMPLANATA. Green, depressed, and emarginate before, with a white band in the middle. Müll.

The body elliptic; eyes black; legs and feelers pellucid.

MUSCULUS. Green, oval, compressed, grooved above, beneath carinated. Müll.

Varies in colour; the eyes are black, feelers white, and pellucid. Found in marshes.

LATIPES. Oval, yellowish, and spotted each side; fourth joint of the posterior legs dilated. Müll.

In marshes; the legs pale-blueish, with the tip brown.

VERSICOLOR. Nearly square, with whitish, blue, and brown spots. Müll.

Found in wet meadows; the body white, beneath brown, with a yellow margin; feelers and legs pellucid, white.

**** Section. Eyes four.

CALCAREA. Rounded, brown, with a clear white disk. Inhabits marshy woods; the eyes are black; feelers pointed, and the legs pale and pellucid.

FUSCATA. Ovate, reddish-brown, with a darker disk, and pale rufous fork. Müll.

The body is convex, and spotted on the back; eyes black; legs and feelers white and pellucid. Found in muddy ditches.

UNDULATA. Oval, pale-yellow, with flexuous black streaks. Müll.

In marshes. The body sub-globular, pellucid, with black eyes.

MACULATA. Oval, red, with black spots on the back. Müll.

Eyes black; legs and feelers pale-yellow, and pellucid.

***** Section. Eyes six.

UMBRATA. Rounded, red, with numerous darker spots. Müll.

Inhabits marshy woods; the body glabrous, sub-depressed with ten darker spots above, beneath blackish; eyes black; feelers yellowish at the tip; legs yellow.

HYDRAGOGUES, **HYDRAGOGA,** ἰδραγωγός, from ἵδρα, *water*, and ἀγω, *to draw*, in *Medicine*, an appellation given to those purgatives which produce copious watery stools.

The most acrid and drastic purgative drugs are those to which the epithet of *hydragogue* is particularly applicable; not as the ancients conceived, because they have a particular attraction for the *watery* part of the circulating fluids; but because, by their powerfully stimulant operation on the mouths of the exhalent arteries, which open every where along the inner surface of the intestinal canal, they occasion those vessels to pour out their fluids in great abundance, and thus render the stools thin and watery. Of the more active hydragogues in modern use are the elaterium, scammony, camboge, &c.: jalap, calomel, colocynth, and some other substances of a less acrid quality, when administered in large doses, likewise excite a copious excretion of watery fluids from the intestines. Some caution is requisite in the administration of these active cathartics, especially in habits originally delicate or weakened by disease, or in those whose bowels are peculiarly irritable. Fainting, convulsions, and even death have been the consequence of excessive purging: these results appear to have been not very rare among the ancients, who were obliged to have recourse to such medicines as white hellebore, when a considerable catharsis was necessary. "Convulsio post helleborum lethale," is an aphorism more than once expressed by Hippocrates. A *hypercatharsis*, with bloody stools, is a more common consequence of hydragogue purging in modern times. See **HYPERCATHARSIS**.

Drastic hydragogues are seldom indicated, except in dropsy especially of the belly, in which a copious watery discharge from the intestines occasionally effects a cure of the disease;—or in cases of paralytic torpor extending to the bowels, in hemiplegia;—or in the painter's cholera, after the spasm has been relaxed by opiates. In enteritis, or inflammation of the bowels, hydragogues should be cautiously shunned, notwithstanding the constipated state of the canal; for since the constipation arises from the inflammatory condition of the intestines, every acrid stimulant applied to them must inevitably augment, rather than alleviate the disease. See **CATHARTIC**.

HYDRANGEA, in *Botany*, from ἵδρα, *water*, and ἀγός, *a vessel*, so named by Gronovius, in allusion to the pitcher-like shape of the seed-vessel. Linn. Gen. 222. Schreb.

299. Willd. Sp. Pl. v. 2. 633. Mart. Mill. Dict. v. 2. Ait. Hort. Kew. v. 2. 76. Juss. 310. Lamarek. Dict. v. 3. 150. Illustr. t. 370. Gært. t. 30. (Hortensia; Juss. 214. Primula; Loureir. Cochinch. v. 1. 104.) Class and order, *Decandria Digynia*. Nat. Ord. *Succulenæ*. Linn. *Caprifolia*, Juss.

Gen. Ch. *Cal.* Perianth of one leaf, superior, five-toothed, permanent, small. *Cor.* Petals five, equal, roundish, larger than the calyx. *Stam.* Filaments 10, longer than the corolla, but sometimes alternately longer and shorter themselves; anthers roundish, twin. *Pist.* Germen roundish, inferior; styles two, short, distant; stigmas obtuse, permanent. *Peric.* Capsule roundish, twin, the double style forming two beaks to it, angulated with many nerves, crowned by the calyx, two-celled by a transverse partition, opening by a hole between the horns. *Seeds* numerous, angulated, pointed, very small.

Eff. Ch. Calyx superior, five-toothed. Corolla of five petals. Capsule of two cells and two beaks, containing many seeds.

1. *H. hortensis*. Chinese Guelder-rose. Willd. Sp. Pl. No. 2. Sm. Ic. Pic. t. 12.—“Leaves elliptical, serrated, very smooth. Stamens all of an equal length.”—This shrub is a native of the East, and is usually cultivated in the gardens of China and Japan, from whence it was introduced into Kew gardens by Sir Joseph Banks in 1790.—*Root* fibrous, much branched, whitish. *Stems* erect, shrubby, having a smooth brown bark. *Branches* opposite, leafy, green, speckled with dark purple spots, flowering at the top. *Leaves* opposite, spreading and curved backwards, bright green, veiny. *Clusters* of flowers terminal, of a beautiful rose-colour, inodorous, green when young as well as in decay. *Calyx* only seen by us in a luxuriant state of deformity, very large, composed of four (rarely three or five) spreading unequal, obovate leaves, which are entire, smooth, rose-coloured, slightly ribbed and permanent. *Petals* generally four, nearly equal, small, obovate, concave, of the colour of the calyx, fading. *Filaments* awl-shaped, red; anthers greyish, with yellow pollen. *Styles* purple.

This plant, which is nearly allied to *Viburnum* and *Sambucus*, is much esteemed for its very elegant flowers and easy culture. We have selected *H. hortensis* for a specimen of the genus, as it is the most beautiful species, out of the four described by Willdenow. The others, *H. arborescens*, *radiata*, and *quercifolia*, are of American origin, tolerably hardy in the gardens of Europe.

HYDRANGEA, in *Gardening*, comprehends plants of the shrubby and flowering perennial kinds; of which the species cultivated here are; the shrubby hydrangea (*H. arborescens*); and the garden hydrangea, or Chinese guelder rose (*H. hortensis*.)

The latter of these sorts is held in high estimation on account of the number of elegant flowers which it displays.

Method of Culture.—The first of these plants is increased by slipping off or parting the roots in the early autumn, and planting them out where the plants are to grow. It succeeds best on a moist soil, and requires no trouble but being kept free from weeds, by digging the ground about it in the winter. When the stems are destroyed in severe frosts, new ones are put forth in the ensuing spring season.

And the second sort is easily increased by planting cuttings of the young shoots, in pots of rich loamy earth in the spring, plunging them in a moderate hot-bed. When they have stricken good root, they should be removed, with balls of earth about their roots, into separate pots, and be placed in the green-house or under other similar protection.

But though this plant is capable of standing the open air

in mild winters, in warm dry situations, it does not flower so well as in the green-house. Superfluous plants should therefore only be employed in this way as they may frequently be destroyed.

These are ornamental plants; the former in fronts of clumps and borders, and the latter among green-house collections and other potted plants, where it produces a fine appearance during the flowering season.

HYDRAOTES, in *Ancient Geography*. See RAUVEE.

HYDRARGYROSIS, a term used by the surgical writers to express the anointing of the body with a mercurial unctio, in order to the raising a salivation.

HYDRARGYRUM, Ἵδραργυρον, a name given to mercury, or quicksilver.

The word is formed of ἵδρα, *agua*, *water*, and ἀργυρος, *argentum*, *silver*; *q. d. water of silver*, on account of its resembling liquid or melted silver. For an account of mercury and its different preparations, see MERCURY.

HYDRASPIS, *water-shield*, or *water buckler*, a machine of wood, invented by John Christopher Wagenfeil, a German, by the help of which a person may walk on the water, without fear of sinking. It encompasses the breast, serving the office of the chest in water-fowl, and is furnished with apertures for receiving a quantity of food, or for preserving money, writings, or other valuable things, in case of an inundation. The person who uses it is provided with paddles for the feet, consisting of moveable flaps of very thick leather, which open and shut, and are fastened to a wooden sole, on which the foot rests, by an iron pin passing through their hinges. They are fastened to the feet by straps or thongs. The inventor of this machine made trial of it in a whirlpool of the Danube, where he moved about in the current without danger. He proposes, that this machine should be used in a shipwreck, in escaping the danger of sudden inundation in passing a river, for the service of war, and hunting and taking water-fowl, &c. Act. Erud. ann. 1691, p. 40.

HYDRASTIS, in *Botany*, so named by Mr. John Ellis, who probably, as professor Martyn conjectures, received it from Miss Colden, daughter of governor Colden. From some confusion, perhaps, in the history of the discovery, or of the communication, Linnæus was led to understand the appellation given by his friend as intended to commemorate “a young lady of noble birth;” whereas it appears rather to have a reference to the native situation of the plant, from ἵδρα, *water*, or ἵδρσις, *an imbibing of water*.—Linn. Gen. 283. Schreb. 379. Willd. Sp. Pl. v. 2. 1339. Mart. Mill. Dict. v. 2. Ait. Hort. Kew. v. 2. 273. Juss. 232. Lamarek Dict. v. 3. 151. Illustr. t. 500.—Class and order, *Polyandria Polygynia*. Nat. Ord. *Multifloræ*? Linn. *Ranunculaceæ*, Juss.

Gen. Ch. *Cal.* Perianth none. *Cor.* Petals three, ovate, regular. *Stam.* Filaments numerous, linear, compressed, a little shorter than the corolla; anthers compressed, obtuse. *Pist.* Germens numerous, ovate, forming themselves into an ovate head; styles very short; stigmas broadish, compressed. *Peric.* Berry composed of oblong grains. *Seeds* solitary, oblong.

Eff. Ch. Calyx none. Petals three. Nectary none. Berry composed of single-seeded grains.

1. *H. canadensis*. Canadian Yellow-root. Linn. Sp. Pl. 784. (*Warneria canadensis*; Mill. Dict. 190. t. 285. *Hydrophyllum verum canadensium*; Linn. Sp. Pl. ed. 1. 146.)—This bog plant is a native of Canada, and flowers in May or June. It was first cultivated by Mr. P. Miller in 1759.—*Root* of a deep yellow colour within, whence its English name, throwing out fibres in the spring. *Stems* about nine inches high, at first light green, but afterwards tinged with

with purple, hairy towards the top. *Leaves* two on each stem, petioled, emarginate at the base, palmate, serrate, three, four, or five-lobed, the lobes having a smaller lobe on each side, changing from light to dark green, or a purplish colour. *Flower* solitary, white, of short duration. *Fruit* red, and succulent. *Berry* resembling the raspberry or mulberry more than the strawberry.—Jussieu says it has the fruit and habit of a *Rubus*, and is allied to *Podophyllum*.—It is remarked by Linnæus, in his herbarium, that the flowers of this plant were unknown to his pupil Kalm. We are not aware that it has been figured by any author except Miller, as quoted above.

HYDRATE, in *Chemistry*, a term that has been applied by some modern chemists to express the chemical union of water with any substance, and more particularly with certain metallic oxyds; thus from the salts of copper precipitates are thrown down by the alkalis, and some of the earths, which are either of a green or blue colour, and which were formerly regarded as mere oxyds. According to Proust, the green is a sub-salt, or an oxyd with a small portion of acid, and a quantity of water; the blue a compound of black oxyd with water alone, in the proportion of 24 parts of water to 76 of oxyd, and is denominated a *hydrate* of copper. The water is thought to be in a state of chemical combination, and to be the cause of the blue colour. This hydrate, by the same chemist, is supposed to be the base of a number of salts. The water may be expelled with a low red heat.

HYDRAULICON, in the *Ancient Music*, an organ blown by the fall of water. From the description of this instrument by Vitruvius, cap. xiii. it seems as if the water which forced the air into the pipes was pumped by men. Indeed, it has been much disputed whether it was played with *fingers*, by means of levers or *keys*; and yet the description of it by Claudian seems such a one as would suit a modern organ, only blown by water instead of bellows.

“Vel qui magna levi detrudens murmura tactu
Innumeras voces fegetis moderator ænæ
Intonet erranti digito, penitusque trabali
Veste laborantes in carmina concitet undas.”

In Athenæus, lib. iv. p. 174, there is a history and description of this instrument. He tells us that it was invented in the time of the second Ptolemy Euergetes, by Ctesibius, a native of Alexandria, and by profession a barber; or rather, that it was improved by him, for Plato furnished the first idea of the hydraulic organ, by inventing a night-clock, which was a *clepsydra*, or water-clock, that played upon flutes the hours of the night at a time when they could not be seen on the index.

The anecdote in Athenæus concerning the mechanical amusements of the great ideal philosopher, is curious. What a condescension in the *divine* Plato to stoop to the invention of any thing useful! This musical clock must have been wholly played by mechanism. But neither the description of the hydraulic organ in Vitruvius, nor the conjectures of his innumerable commentators, have put it in the power of the moderns either to imitate, or perfectly to conceive the manner of its construction; and it still remains a doubt whether it was ever worthy of the praises which poets have bestowed upon it, or superior to the wretched remains of the invention still to be seen in the grottos of the vineyards, near the city of Rome.

The pneumatic organ, or instrument blown by bellows, and furnished with keys, such as are in present use, though perhaps a descendant from the hydraulicon, will have a distinct article, where its invention will be discussed, and its improvements traced, among those of modern instruments.

HYDRAULICS, that part of statics which considers the motion of fluids, and particularly water; with the application of it in artificial water-works. Hydraulics, as distinguished from hydrodynamics, is that science which treats of certain machines or engines, in which fluids are principally concerned.

The word is derived from the Greek, ὑδραυλος, *founding water*, formed of ὑδρα, *agua, water*; and αυλος, *tibia, pipe, or flute*: the reason of which is this, that at the time of the first invention of organs, being unacquainted with the method of applying bellows to blow them, they made use of a cataract or fall of water to make a wind, and found them.

To hydraulics belong not only the conducting and raising of water, with the construction of engines for those purposes, but also the laws of the motion of fluid bodies, the nature of springs, the course of rivers, the agitation of waves, the theory of the tides, &c.

Hydrostatics explain the equilibrium of fluids, or the gravitation of fluids at rest: upon removing that equilibrium, motion ensues; and here hydraulics commence.

Hydraulics, therefore, suppose hydrostatics; and the generality of writers, from the immediate relation between the two, join them together, and call them both either hydraulics or hydrostatics.

The laws of hydraulics the reader will find under **FLUID**. The art of raising waters; with the several machines employed for that purpose, as siphons, pumps, syringes, fountains, jets d'eau, fire engines, &c. are described under these, and other articles of a similar kind, respectively.

The science of hydraulics must be allowed to be of as great importance to civil life, and especially to a maritime nation, as any department of practical mechanics. Let us only reflect for a moment to what state the metropolis of England would be reduced, if deprived of pipes for the conveyance of water, of pumps, and fire engines; and how much the commerce of the whole kingdom has been facilitated and increased by the formation of navigable canals, and we shall be convinced of the importance and utility of the art of modifying the motion of water, and of the principles of hydraulics, on which that art depends.

The principal writers who have cultivated and improved hydraulics, are Archimedes in his *Liber de Insidentibus Humido*; Hero in his *Liber Spirituum*, who is the first who has written on hydraulic machines; Marinus Ghetaldus in his *Archimedes promotus*; Jo. Ceza, in his *Geometria Motus*; Jo. Bap. Balianus, *De Motu Naturali Graviorum, Solidorum et Liquidorum*; Mariotte, in his *Mouvement des Eaux et autres Fluides*; Boyle, in his *Hydrostatical Paradoxes*; Fr. Tertius de Lanis, in his *Magisterium Naturæ et Artis*; Lamy in his *Traité de l'Equilibre des Liqueurs*; Rohault; Dr. Wallis in his *Mechanics*; D. Guglielmini, in his *Mensura Aquarum Fluentium*, where the higher laws of hydraulics are reduced to practice; sir Isaac Newton, in his *Phil. Nat. Prin. Mathematic.*; Varignon, in the *Memoirs of the Royal Academy of Sciences*; Jurin, Belidor, Bernouilli, Solomon de Caux, in a French treatise of *Machines*, and chiefly hydraulic ones; Casp. Scottus in his *Mechanica Hydraulico-pneumatica*; De Chales, in his *Mundus Mathematicus*; Boecler, in his *Architectura Curiosa*; Luc. Antonius Portius; Herman; Wolfius; S'Gravesande; Muffchenbroeck; Leopold; Sturmius, in his *Treatise on the Construction of Mills*; Switzer's *Hydrostatics*; Euler; Emerson; Defaguliers; Clare; Ferguson; Berda; D'Alembert; Lagrange; Boffut; Buat; Ximenes; Lametherie; M. Young; Bernhard; Prony; Lorgna; Vince; Venturi; &c. &c. &c.

HYDRAULO-PNEUMATICAL, a compound term, applied by some authors to such engines as raise water by means of the spring of the air. See **AIR**, **WATER**, and **ENGINE**.

Mr. Boyle mentions a very pretty fountain, which he calls hydraulo-pneumatical; made by the spring of the air pressing up water in a pipe upon the air's being exhausted out of a receiver, and thus the weight of the atmosphere taken off. See **FOUNTAIN**.

HYDREA, in *Ancient Geography*, an island of the Hermonitic gulf, situated S.E. of the Argolide peninsula. See **HERMIONE**.

HYDRELÆON, Ἰδρελαίων, compounded of ἵδωρ, *water*; and εἶλαιον, *oil*, in *Pharmacy*, a mixture of common oil and water.

The hydrelæon was taken internally to excite vomiting; externally it is anodyne, and promotes suppuration.

HYDRENTEROCELE, a term in *Surgery*, denoting a hydrocele complicated with an intestinal hernia. Hydrenterocele is compounded of three Greek words, viz. ἵδωρ, *water*, εντέρον, *an intestine*, and κελύκη, *a tumour*. See **HYDROCELE**.

HYDRIA, in *Ancient Geography*, an island of the Adriatic sea, placed by P. Mela before the Electrides.

HYDRIA, or *Idria*, in *Geography*, a town of Germany, in the duchy of Carniola. N. lat. 46° 14'. E. long. 14'.

HYDRIA, in *Mythology*, the name given by the Egyptians to the god of the water, which they represented by a vase, perforated on all sides. According to Vitruvius (lib. viii.) the priests upon certain days filled this vase with water, adorned it with great magnificence, and then placed it upon a kind of public theatre, where all prostrated themselves before the vase, with hands lifted up to heaven, and gave thanks to the gods for the benefits they received from this element. The intention of this ceremony was to teach the Egyptians that water was the principle of all things, and had communicated life and motion to every thing that breathes.

HYDRIAPHORÆ, compounded of ἵδωρ, *water*, and φέρω, *I carry*, among the Athenians, a designation given to wives of strangers residing at Athens.

They were thus called, as being obliged during the procession of the festival Panathenæa, to carry vessels of water. Potter, tom. i. p. 56 and 401.

HYDRIAS, in *Ancient Geography*, a country of Asia Minor, in the vicinity of the river Marlyas. Herodotus.

HYDRINUS, a name given by some authors to the *ophites*, or serpent-stone.

HYDROCANISTERIUM, a fire engine; or a machine which spouts water plentifully, and with force; used to be applied to the extinguishing of fires, and conflagrations of houses, &c. We have various contrivances to this effect: the first, and which is, as it were, the basis of all the rest, is a pump inclosed in a cistula, or wooden vehicle filled with water, and mounted on wheels; the pump being wrought with long levers which come out of the cistula: and the water it raises directed to the place by means of a jointed tube.

The Dutch and others use a long flexible tube of leather, sail-cloth, or the like, which they carry or conduct in the hand from one room to another as occasion requires; so that the engine may be applied where the fire is only within-sight, and does not burst out to expose it to its external action. To improve on this original fire-engine, they have since contrived to make it yield a continued stream; by substituting a forcing or pressing pump in lieu of the sucking pump. See **FIRE-ENGINE**, and **FORCING PUMP**.

HYDROCANTHARUS, in *Entomology*. See **DY-TISCUS Marginalis**.

HYDROCARBONATE GAS, in *Agriculture*, an ærial fluid formed during the decomposition of water, which is said to be useful in promoting the process of vegetation. It is supposed by the author of the work entitled "Phytologia," that during the process of putrefaction "carbon is not only converted into carbonate acid, but there appears to be a decomposition of water, as is known by the smell of hydrogen; and it is probable that this inflammable body may unite with carbon, as in hydrocarbonate gas, and thus render them both soluble in water, and absorbable by the vessels of vegetable roots, without their passing into an acid or gaseous form, and may contribute much to the nutriment of vegetables." This hint requires the further attention of the philosophical agriculturist.

HYDROCARDIA, a term invented by Hildanus to express a serous, sanious, or purulent tumour of the pericardium.

HYDROCELE signifies, in *Surgery*, any preternatural collection of water in the scrotum. The term is derived from ἵδωρ, *water*, and κελύκη, *a tumour*. In this disease the fluid may occupy various parts of the scrotum. In some cases it is situated in the cellular membrane, which affection receives the appellation of *hydrops scroti*. In most instances it is contained in the tunica vaginalis testis. In some examples it is lodged within the sheath of the spermatic cord; in others it is included in a preternatural cyst; occasionally the water is contained in a true hernial sac; therefore we have five different kinds of hydrocele distinguished by the particular situation of the fluid.

Hydrops Scroti.—The first species, namely, the hydrops scroti, is nothing more than an œdematous swelling of the scrotum. The water is diffused throughout all the cellular membrane of this part of the body, causing every where an equal distension, so that the raphe is not pushed out of the central situation which it naturally holds. The swelling has all the character of œdema; the pressure of the end of the finger makes an impression upon it; the surface of the scrotum is smooth and shining, without any vestige of the corrugations; the part retains its natural colour, is generally very soft, and has a cold feel. In most cases the prepuce is also affected with a similar sort of swelling, so that the patient is actually troubled with a phymosis. In certain instances vesicles make their appearance on the integuments of the penis. We may add, that the tumour is quite free from pain. In some cases one side of the scrotum is more distended than the other, and, consequently, the raphe is not situated in the middle. It is deserving of notice, that women are sometimes affected with a similar swelling of the labia.

The hydrops scroti is generally a symptom of another constitutional disease, especially of ascites and anasarca, in which event it is commonly attended with an œdematous swelling of the feet. However, it is occasionally quite a local disease; and in this case it is usually a consequence of pressure upon the returning vessels, produced by a dislocated thigh-bone, a badly made truss, an indurated omental hernia, &c. Sometimes the disease is noticed in new-born children, and it has been observed to follow contusions of the scrotum, and exposure either of this part, or of the whole body, to certain degrees of cold.

An analogous disease may proceed from an extravasation of urine in the cellular membrane of the scrotum. This particular case is sometimes the consequence of a retention of urine. When the last affliction has attained a high degree, gangrenous specks are apt to be formed on the poste-

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rior and inferior parts of the bladder, so as to let the urine escape into the cellular substance of the perineum and scrotum. In this instance the swelling of the latter part originates suddenly; and in proportion as it increases, all the symptoms of a preternatural distention of the bladder undergo a diminution. The urine sometimes passes through an ulcerated aperture in the urethra into the cellular membrane of the scrotum. Hence fistulæ in perineo may be attended with this sort of extravasation. When, also, by external violence the tunica vaginalis has been burst, while distended with water, the fluid has been known to escape from the cavity of that membrane into the cellular substance of the scrotum, the case changing at once from a common hydrocele into an hydrops scroti. Lastly, we have to remark, that a similar extravasation of fluid sometimes happens in the palliative operation for the ordinary hydrocele, when the puncture is executed with a lancet, and the opening in the skin happens to slip away from that in the tunica vaginalis, while the water is flowing out.

In the treatment of the hydrops scroti, it is always an indication to remove the causes of the disease, whether they are of a local or general nature. When a dropsy of the abdomen is fortunately cured by medical means, the hydrops scroti spontaneously disappears. The swelling of the scrotum, likewise, proceeding from the pressure of an ill made truss, a dislocated thigh-bone, &c. will subside as soon as such pressure is removed. But surgical writers appear to coincide in opinion, that cases may present themselves in practice where local treatment is indispensably proper. An instance of this kind may be where the general or local cause does not admit of a removal in a complete or sufficiently speedy manner, and where the tumour of the scrotum is attended with serious inconvenience, or any degree of danger. Thus, when urine is effused into the scrotum an immediate operation is proper, in order to avert inflammation, suppuration, sloughing, and fistulæ, effects which would otherwise quickly follow. In cases of the common hydrocele of the tunica vaginalis, erysipelatous inflammation, ulcerations, and gangrenous complaints may occur when the swelling is exceedingly large. The prepuce is sometimes so swollen that the urine cannot escape from the orifice of the urethra. Yielding as the integuments of the scrotum are, they may yet be burst by being excessively distended with fluid, as the observations of Mr. Warner confirm. Local means are also obviously requisite whenever the hydrops scroti arises from a local cause.

The most common and effectual means of relieving the hydrops scroti is letting the fluid out of the cellular membrane by suitable punctures. In a few instances, indeed, a milder plan will answer the purpose. The complaint in new-born infants may usually be cured by bathing the scrotum with warm wine. The hydrops scroti, consequent to a bruise, or exposure to cold, may in general be very soon dispersed by the use of a suspensory bandage, and repeatedly washing the tumour with brandy, lime-water, wine, vinegar, or any decoction of altringent and aromatic herbs. The same remedies will also be found to avail when the swelling remains after its cause has been removed. When the tumour is exceedingly large, and the symptoms pressing, the surgeon is not to consume time in the trial of these applications, but immediately make the necessary punctures. If urine should happen to be the fluid in the cellular membrane of the part, proper incisions should be directly made for its escape, lest inflammation, abscesses, and gangrenous mischief ensue.

The fluid of hydrops scroti may be discharged either by an incision or a puncture. Five or six superficial scarifications

with a lancet will in general be found to answer the purpose. If such openings should be closed the day after making them, before all the fluid has been discharged, the practitioner is called upon to use the lancet in the same manner again. When incisions are preferred, it is customary to make one about an inch long on each side of the raphe, and deep enough to extend through the skin into the cellular membrane. Scarifications are commonly deemed the most advisable. It is true that they do not let out the fluid so quickly as incisions, but they are safer, as every material wound in dropsical parts is very apt to fall into a gangrenous state. It is remarked, that frequently the incision soon begins to be painful, its edges to be affected with hardness and inflammation, while an erysipelas seizes the whole circumference of the wound, and rapidly induces gangrenous disorder.

Such evils are most liable to occur when the operation has been performed at a period when the scrotum is excessively distended, and already somewhat affected with an erysipelatous redness, and when care has not been taken to keep the parts quite dry, during the issue of the fluid. Hence it is an important rule to keep the scrotum from being wet, by laying over and under it dry compresses. When pain and inflammation follow the operation, the most eligible applications are the saturnine lotion, lime-water, the decoction of bark, a solution of alum, &c. Should mortification actually take place, the patient is always in considerable danger, and the event is too frequently fatal. Sometimes the whole scrotum sloughs and is cast off, both the testes being left entirely denuded. Notwithstanding all this mischief, the testes usually become furnished with a new sort of covering.

We know of only one example in which incisions are decidedly better than scarifications, and this is where urine is lodged in the cellular membrane of the scrotum, and where a speedy discharge of this irritating fluid is urgently required.

Of the Hydrocele of the Tunica Vaginalis Testis—This is the chief and most interesting form of the disease. It is situated in the cavity of the tunica vaginalis testis. It makes its first appearance as an oval swelling at the lower end of the spermatic cord, seeming, indeed, to arise from the testis itself. In proportion as it increases in size it approaches more and more towards the abdominal ring; but between this opening and the upper part of the tumour, the spermatic cord may always be felt quite free. The swelling continuing to grow larger, it arrives at length as high as the ring, so that the spermatic cord cannot be at all distinguished; yet it is worthy of notice that the upper roundish end of the tumour may still be plainly felt, particularly on laying the hand under the scrotum, and pressing the swelling upwards; for when this is done the upper margin of the tumour projects so much forwards that it may always be distinctly perceived. The finger can even be put between the upper part of the swelling and the abdominal ring, by which means the surgeon can constantly ascertain that the tumour does not come out of the latter aperture. Besides, the disease cannot be easily mistaken for a hernia, especially as the swelling is subject to no variation of size, whether the patient is in an erect or recumbent posture, whether he coughs, holds his breath, or the tumour itself is compressed. We may also observe that all the other general symptoms of a hernia are absent.

The swelling is commonly of an oval shape; the greatest diameter extending downwards. Sometimes the position of the tumour is oblique, or even completely transverse. In this last circumstance it may be necessary to make the puncture

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ture on the right side of the scrotum in performing the palliative operation, notwithstanding the collection of fluid may be situated in the cavity of the left tunica vaginalis, and *vice versa*. Probably this unusual shape of a hydrocele may be caused by tight breeches or the pressure of the suspensory bandage. The larger the tumour is the rounder does its figure become; but in some cases the shape is very different from what it is in others. Hydroceles have been observed to have occasionally quite a cylindrical appearance. The tumour is occasionally divided by a sort of contraction. When a hydrocele is the consequence of inflammation, the tunica vaginalis is sometimes adherent in different places to the tunica albuginea, and of course the swelling has an irregular knobby shape.

The tumour feels like a bladder distended with water. In its commencement it is soft and yielding; but the tension and hardness increase in proportion to the quantity of fluid, and the quickness with which it has accumulated. It deserves attention, however, that there are some hydroceles of considerable magnitude, which are so remarkably soft that they may be made quite flat by pressure, and allow the testes to be plainly felt. The freer the swelling is from tension the more evident is the fluctuation; but even in cases which are exceedingly tense a certain degree of fluctuation can be distinguished on applying the palms of the hands on opposite sides of the tumour. Schmucker has seen hydroceles which felt as hard as a farcocele, and Saviard mentions their being occasionally attended with the hardness of horn. In such instances the tunica vaginalis is in general thickened and indurated in an extraordinary degree, and, in certain cases, that membrane, instead of containing merely an aqueous secretion, has been found to include cysts or vesicles filled with a yellow fluid.

When either the patient himself or the surgeon handles the tumour, the same kind of sensation is communicated to the fingers, whatever part of the swelling is touched. The surgeon perceives every where the same kind of feel as he would be sensible of in handling an elastic distended bladder, and the patient suffers no pain from any manual examination of the disease. The whole circumference of the swelling is smooth and even, except just at one place, which is where the testis is situated, and is usually at the hinder and middle part, though not unfrequently at the upper portion of the tumour. In such situation the surgeon may feel an inequality and an inelastic hardness, and when the part is compressed the patient is afflicted with the peculiar pain which is always produced by squeezing the testis. This gland may almost always be felt at the back part of the swelling, at various heights, according as the tunica vaginalis happens to have been dilated upwards or downwards by the increasing quantity of the fluid. B. Bell twice saw the testis in front of the tumour. The same gland, though at the back part of the swelling, has been found adhering to the fore part of the tunica vaginalis, in consequence of inflammation, which was prior to the hydrocele. Mr. Else had an opportunity of seeing a case, where the oval swelling of a hydrocele was in an horizontal position from before backwards, while the testis could be plainly felt at the bottom of the scrotum.

When the end of the finger is pressed upon the hydrocele of the tunica vaginalis, it does not leave after it any impression or dent. How large soever the swelling may be, the skin of the scrotum always retains some vestiges of the corrugations, or, at least, is never so smooth and shining as it is in the case of hydrops scroti. Frequently, when the tumour has acquired a considerable size, the penis becomes retracted in such a manner, that the prepuce has somewhat the appear-

ance of a navel at the upper and forepart of the scrotum. The disease is entirely free from pain, except when it increases very quickly, in which circumstance a degree of uneasiness is experienced in the swelling, at the same time that painful sensations are felt in the loins, probably excited by the weight of the tumour, when the patient has been a long while in a standing posture. We find, therefore, that such pain may be relieved by the patient's lying down. As this species of hydrocele commonly affects only one side, or since, when in a few instances, it happens at the same time on both sides of the scrotum, it is not equally large on each side, the raphe is never seen exactly in the middle. The integuments of the scrotum have their natural colour. Most hydroceles of the tunica vaginalis are attended with a certain degree of transparency, and the knowledge of this circumstance is of infinite importance to the practitioner, since it will often enable him to form an accurate judgment respecting ambiguous cases. In order to learn whether the swelling is transparent, the chamber should be darkened, while a lighted taper is held just on one side of the scrotum, while the surgeon looks at the other, which ought to be in the shade. It is necessary, however, for every surgeon to be aware that transparency is by no means a constant symptom of a hydrocele, and is never present, either when the tunica vaginalis is preternaturally thick and indurated, or when it is filled with a dark turbid fluid, or cysts resembling hydatids.

By paying attention to the foregoing symptoms, the surgeon will be able, in all ordinary cases, to discriminate the hydrocele of the tunica vaginalis from every other kind of tumour to which the scrotum is liable. But yet it must be allowed that there are cases where the diagnosis is attended with considerable difficulty, certain diseases having so much similitude to the hydrocele of the tunica vaginalis, that they may deceive the most attentive and experienced surgeon. One of such cases is the farcocele, which has the same shape as the hydrocele, and, like it, is situated at the lower end of the spermatic cord. The chief difference, therefore, between the two diseases, seems to be, that the farcocele is hard, while the hydrocele has a soft, yielding, elastic feel, accompanied with a fluctuation. The farcocele itself, however, is not always remarkably hard, and the hydrocele is now and then very indurated. The farcocele, indeed, is not transparent; neither is the hydrocele in certain instances; and these are cases where a mistake may easily be made. Still, with due attention, both diseases may be discriminated with tolerable precision. The farcocele, when held in the surgeon's hand, seems heavier than the hydrocele. The testis is seldom equally indurated every where, and the farcocele is usually much softer in some places than others. The hydrocele presents the same kind of feel at every point, except behind, where the testis is felt. When, in the case of hydrocele, pressure is made in this latter situation, the patient experiences a much more acute sensation than when the pressure is made upon any other part of the tumour; but in the example of farcocele, the patient commonly has the same kind of feel, let the pressure be applied to any part of the swelling whatsoever. The hydrocele may be compared with a bladder full of water, the surface of the tumour being every where smooth and even, except in the situation of the testis. This gland itself, when hardened, seldom undergoes a regular, uniform enlargement; but generally has a surface more or less uneven. When the upper portion of the spermatic cord can be felt, and it seems quite hard and thickened, the surgeon has reason to suspect that the case is a farcocele. Lastly, though a hydrocele, when gently handled, may seem to be considerably hard; yet, on being more strongly compressed, it will generally betray a soft elastic

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elastic feel, which is never the case with an indurated sarcocele.

A hydrocele is sometimes conjoined with a fleshy enlargement of the testis, which case is well known among surgeons under the appellation of *hydro-sarcocele*. As the diseased testis is here surrounded with water, it cannot be felt nor examined by the fingers. However, when an unusual degree of hardness is perceptible at the back part of the tumour, where the testis is situated, or when the upper portion of the spermatic cord is found to be quite indurated, the surgeon has reason to suppose that the testis is affected with sarcocele. The latter is commonly the original and principal disease, the hydrocele first coming on subsequently to the enlargement of the testis. To the experienced practitioner this circumstance often affords useful light. We learn from the observations of that very excellent surgeon, Mr. Warner, that omental herniæ in young children are sometimes so transparent, that they may be mistaken for hydroceles. But all the other ordinary characters of these fluid swellings are absent. A cytocele, or hernia of the urinary bladder, has some resemblance to a hydrocele, though the two affections may easily be distinguished from one another by paying attention to the particular symptoms of each, as described in a foregoing part of this work, (see *HERNIA*;) and in the present article.

The diagnosis is always apt to be attended with a degree of obscurity, when the hydrocele is complicated with other diseases of the scrotum. Sometimes it is conjoined with a hernia. On other occasions, the hydrocele of the tunica vaginalis exists in conjunction with one of the spermatic cord. The surgeon can only acquire a perfect knowledge of such cases by paying close attention to the peculiar symptoms of each of the diseases. When the requisite information cannot be thus obtained, it may often be procured by adverting to circumstances which presented themselves in an early stage of the case; for frequently the hydrocele is at first simple, and does not become complicated till an advanced period. The nature of the case is often elucidated on the palliative operation for the hydrocele being performed, as the other disease of the scrotum becomes quite obvious immediately the fluid is discharged from the tunica vaginalis.

The species of hydrocele, now engaging our attention, continues for a long while unattended with any serious inconvenience, or pressing symptoms: it only annoys the patient by its size and weight. When it is exceedingly large, the penis is drawn completely back, so that the urine dribbles over the forepart of the scrotum, and, unless particular care be taken to maintain cleanliness, is liable to excite inflammation and painful excoriations. When a hydrocele is the consequence of an inflammation of the testis, the fluid generally accumulates with great quickness. But the progress of the disease is occasionally so slow, that the palliative operation has not been required till twenty years after the commencement of the disorder. In general, the water only collects in one tunica vaginalis; sometimes in both. In the latter kind of case, a preternatural communication has been noticed between the opposite sides of the scrotum, though we believe such a circumstance is very uncommon. See Richter's *Anfangsgrunde der Wundarzneykunst*, Band 6. Kapitel 5.

The hydrocele appears to be one of those diseases, the causes of which are far from being well understood. In a natural, healthy state, the cavity of the tunica vaginalis always contains a small quantity of a fine fluid, exhaled from capillary arteries, and constantly absorbed by vessels for that purpose. This fluid, in the natural small quantity, serves to keep the tunica albuginea moist, and to prevent a cohesion between it and the vaginalis; a consequence which almost

necessarily follows any such diseased state of these parts as prevents the due secretion of it. On the contrary, if the quantity deposited be too large, or if the regular absorption of it be by any means prevented, it will be gradually accumulated, and, by distending the containing bag, will form the disease in question.

It is a disease from which no time of life is exempt; not only adults are subject to it, but young children are frequently afflicted with it, and infants sometimes born with it. The great Mr. Pott professed himself incapable of determining the immediately producing cause. Ruyfch thought that the complaint might proceed from a varicose state of the spermatic vessels. What real foundation there may be for such conjecture, Pott could not say, and, at the same time that he acknowledges the frequently varicose affection of the spermatic vessels in cases of hydrocele, he seems to consider it as unproved whether such state be a cause or an effect of the disease. It is also remarked by Mr. Ramsden, that though we often find the hydrocele present with the varicocele, we much more frequently meet with this last disease, even in its most advanced states, unaccompanied by any accumulation of fluid within the sacculus. (*Practical Observations on the Sclerocele*, &c. p. 196.) The hydrocele of the tunica vaginalis may frequently, perhaps commonly, be regarded as a disease altogether local, and dependent upon local causes. According to surgical writers, contusions of the scrotum often give rise to the complaint, and hence it is said to occur with particular frequency in persons who are in the habit of riding a great deal on horseback. In such cases the tumour is sometimes formed with surprising quickness. Pressure made upon the upper part of the spermatic cord by an ill constructed truss, or by an indurated omental hernia, may also be a cause of an hydrocele. Sometimes the latter malady is joined with a sarcocele, when it may be considered only as an effect of the disease of the testis. A hydrocele may likewise originate from an inflammation of this last gland. In some instances the disease appears to depend upon general and less manifest causes. We are informed of its having arisen in the space of four days, after exposure to cold. (See Richter's *Anfangsgrunde*, &c. Band 6. p. 67.) Warner and other authors have taken particular notice how prevalent the disease is in warm climates, and they make mention of patients who got well on removing from a hot into a cold country, but suffered relapses on their return into a warm part of the world. We deem the opinion, that hydroceles are ever connected with a venereal cause, entirely destitute of foundation.

Mr. Ramsden has recently advanced a new doctrine respecting the cause of hydroceles. This experienced surgeon has established three forms of the disease, as occurring within the tunica vaginalis; namely, the acute, the spurious, (*hydro-sarcocele*), and the true, or chronic hydrocele. He endeavours to prove that all these cases may be dependent upon excitement within the urethra. He remarks, "that the testicle will become hardened and enlarged, and that the sacculus of the tunica vaginalis will be distended with watery fluid, in consequence of various degrees of excitement within the urethra, from the irritable and acutely painful stricture, down to that concealed, subtle, and local derangement of the membrane, which is totally free from pain, until it is pressed upon by the bougie, and which may exist for years without the patient being conscious of its presence.

"It cannot therefore be unreasonable to suppose that an habitual susceptibility of the whole membrane of the urethra may, in some instances, be induced by general or local causes, and although it create no conscious sensation to the patient, may have the power of gently provoking the excre-

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tory vessels of the testicle somewhat beyond their natural action, and thus, by destroying the balance of fluid, in course of time establish that undue accumulation which characterizes the chronic, or true hydrocele.

"I am induced," says Mr. Ramsden, "to offer this opinion from a variety of facts which have presented themselves to my observation, and which lead me to suspect, that in almost every case of true hydrocele the urethra will be found either to have been exposed at some previous time to excitement or inflammation, or to be in a present state of increased tension, from constitutional irritability, from the membranous fence, or from some other of the several general or local causes, to which I have in the preceding pages referred the derangement of this membrane.

"The prevalence of hydrocele in the East and West Indies, instead of being attributable to the relaxation of the climate, may more reasonably be referred to the constant excitement to which the urethra is exposed from the habits of the table; since it is well known that, in those hot countries, every individual indulges in high-seasoned dishes, and in the most stimulating description of diet.

"The frequency of the hydrocele being present with the varicocele may also be satisfactorily explained, by referring to that state of continual excitement, which is kept up by the dilatation and weight of the loaded vessels. In the more advanced states of varicocele, nothing is more common than an habitual gleet or weeping from the urethra, which is occasioned by the dragging of the varicose vessels; and it certainly appears not difficult to suppose, that such excitement in the urethra, when once established, may in its turn re-act upon the testicle, and produce a case of hydro-varicocele." P. 193—201.

For the cure of the hydrocele of the tunica vaginalis, a surgical operation is generally necessary, as it is only in a few instances that the complaint yields to internal or external remedies. The observations of writers prove, however, that in young children the disease may sometimes be dispersed by emetics. A boy, twelve years old, was cured of a hydrocele by means of the steam of vinegar, the saturnine lotion, and repeated purgative doses. (See Richter's Chir. Bibliothek, 5. b. p. 120, 9. b. p. 593.) Morand succeeded in curing several hydroceles by making an issue on the scrotum; and Douglas found similar success from placing an issue near the groin. Schmucker dispersed a hydrocele by fumigating the scrotum with vinegar every morning and evening, and in the intervening time compresses wet with the same fluid. In the course of a few days the tumour subsided, the scrotum emitting a large quantity of perspiration. Warner frequently cured hydroceles in young subjects by means of purgatives, and stimulating astringent applications. Mohrenheim succeeded in dispersing a hydrocele, which arose from exposure to cold. (Richter's Anfangsgr. &c. Band 6. p. 68.) Mr. Keate has recommended the following lotion, as an efficacious remedy: R Sal. Ammon. Pulver. ʒj Acet. Spir. Vin. R. etif. aa ʒiv Mifce. Compresses, wet with this mixture, are to be laid upon the scrotum, and kept there with a bag-truss. They should be dipped in the liquid three times a day. Mr. Keate assures us, that when this plan is properly followed up, the water of the hydrocele not only gradually disappears, but that it does not accumulate again, and the cure is radical and permanent, if the application be continued about a month. This method may be tried, either while the tumour is filled with water; or after the fluid has been let out. In the first instance it excites the absorption of the water; in the second it prevents a new collection. When the application happens to make the integuments red or painful, it must be left off a few days. The observations of

Mr. James Earle, however, tend to evince, that the preceding practice does not always answer, and is not to be depended upon. From the account which Mr. Ramsden has lately published, of the hydrocele being connected with a morbid state of the urethra, one might suppose that the disease would yield to the proper treatment of this last canal. This gentleman remarks, however, that in cases of chronic hydrocele, the use of the bougie is not attended with the same degree of success as in the examples of the acute and spurious forms of the complaint. We may again state, that by a spurious hydrocele is meant a collection of fluid in the tunica vaginalis, accompanied by an enlargement of the testicle. The simple indurated enlargement of this gland, unattended with any subversion of its organization, we conceive to be the case, which Mr. Ramsden has lately signified by the appellation of sclerocele, and which, being sometimes joined with an accumulation of fluid in the tunica vaginalis, constitutes an instance of spurious hydrocele, or what this eminent surgeon has named hydro-sclerocele, in order to distinguish the disease from the hydro-varicocele where the organization of the testicle is actually more or less subverted. Now Mr. Ramsden has endeavoured to prove, that the acute hydrocele, as well as the hydro-sclerocele, may be cured by treating the urethra with bougies, so as to destroy the morbid irritation in that canal. "The sclerocele of the testicle, whether with or without fluid in its sacculus, yields most readily to the use of the bougie, when the progress of induration in the gland has been most rapid, and the point of irritation within the urethra, on which it depends, is most susceptible; but the chronic hydrocele being slow in its progress, and dependant on a much more modified state of derangement in the urethra, is, on such account, very little under the influence of the treatment of that membrane, and must be referred to some other operation for its permanent cure." (P. 202—203.) From a note, it appears to be Mr. Ramsden's opinion, that when a tumour of the scrotum presents itself under the external appearances of true chronic hydrocele, and is co-existent with an acutely deranged urethra, and especially if the patient has any dislike to the hydrocele being tapped, the treatment of the urethra by the bougie will always be a fair experiment previous to the letting out of the water. Mr. Ramsden can assert, from his own experience, that it will, in some few instances, prove successful in curing the hydrocele. He thinks it probable, that in the cases in which this treatment succeeded, there might be concealed sclerocele; but he considers that such a fact would not lessen the propriety of the experiment. When the true hydrocele is not attended with an urethra so obviously deranged, Mr. Ramsden believes, that an attempt to cure the complaint by the use of the bougie will only be waste of time. See Practical Observations on the Sclerocele, &c. by T. Ramsden, surgeon to Christ's Hospital, &c. &c.

For relieving the present disease, two operations are practiced; one called palliative, the other radical. In the first, the design of the surgeon is merely to discharge the water, which usually accumulates again, and the malady returns. By the second he permanently frees the patient from the complaint, and hinders any relapse, this object being accomplished by exciting an inflammation of the whole surface of the tunica vaginalis, and a consequent universal adhesion of this membrane to the testis. In short, the cavity of the tunica vaginalis, which is the seat of the disease, is thus obliterated. This is the commonly received opinion; but at the same time we are not unaware of a different sentiment upon this same point having been lately advanced by Mr. Ramsden, who has adduced cases in which, from the transparency manifested in the scrotum, a considerable time after the radical operation

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had been performed, the doctrine of the disease being always cured, by the obliteration of the cavity of the tunica vaginalis, is called in question. The surgeon cannot invariably and indiscriminately undertake either of the preceding operations, at his own pleasure, with equal prudence and propriety. The palliative operation is entirely exempt from danger, and when a sufficient quantity of fluid is collected in the tunica vaginalis may be safely undertaken, even though the testis may not be altogether undiseased, nor the patient in good health. On the other hand, the radical operation, executed in any way whatsoever, demands more caution, and if done in improper cases, may be followed by dangerous and unpleasant consequences. In determining which method is to be adopted, the surgeon should attend to the following directions.

When the hydrocele is exceedingly large, it is not advisable to perform the radical operation, the great distension which the parts have just suffered placing them in not the most advantageous state for bearing inflammation. It is much better, in a case of this sort, to be at first content with merely letting out the water, and to undertake the radical operation afterwards, when a moderate quantity of fluid has accumulated.

When any suspicions are entertained of the testicle being diseased, the surgeon must restrict himself to discharging the water, a plan which can always be securely undertaken, though the testicle may not be found, and has the advantage of enabling the practitioner to feel and examine distinctly this latter part.

Should any radical operation be done, unpreceded by tapping the tumour, and the testicle prove to be affected with sarcocele, castration ought to be immediately performed, since the irritation excited would, in all probability, bring on a malignant change in the disease of the testicle. If an attempt at the radical cure should have been made, and the testicle be found thus diseased, yet, without the case admitting of the performance of castration, the patient is put into a very unpleasant and precarious condition.

When the patient's health is very bad, the radical operation ought not to be undertaken, for fear of inducing alarming symptoms. This observation, however, must not be extended to a class of subjects, who, though not in health, are neither affected with extreme weakness, nor any pressing indisposition. The palliative cure, being free from danger, may be undertaken in almost any states and circumstances.

When the hydrocele is complicated with other diseases of the scrotum, it is a wise maxim to rest satisfied in the first instance with simply discharging the fluid. The surgeon can then examine more accurately the nature of the other disorder, and, at a future period, attempt the radical cure of the hydrocele, if judged prudent, with greater safety.

Of the Palliative Operation.—The intention of this proceeding is to relieve the disease for the present, by discharging the accumulated fluid. The operation by which the water is let out is a very simple one. The only circumstances requiring our attention in it, are the instrument wherewith we would perform it, and the place or part of the tumour into which such instrument should be passed.

The two instruments in use are the common bleeding lancet, and the trocar.

“The former having the finer point (says Mr. Pott), may possibly pass in rather the easier, though the difference is hardly perceptible, but is liable to inconveniences, to which the latter is not. The trocar, by means of its cannula, secures the exit of the whole fluid, without a possibility of prevention, the lancet cannot. And, therefore, it frequently happens, when this instrument is used, either that some of

the water is left behind; or that some degree of handling and squeezing is required for its expulsion; or that the introduction of a probe, or a director, or some such instrument, becomes necessary for the same purpose. The former of these may in some habits be productive of inflammation: the latter prolongs what would otherwise be a short operation, and multiplies the necessary instruments; which, in every operation in surgery, is wrong. To which it may be added, that if any of the fluid be left in the vaginal coat, or insinuates itself into the cells of the scrotum, the patient will have reason to think the operation imperfect, and to fear that he shall not reap even the temporary advantage which he expected. The place where this puncture ought to be made is a circumstance of much more real consequence; the success of the attempt, the ease, and even sometimes the safety of the patient, depending upon it.

“All the anterior and lateral parts of the vaginal coat are loose and detached from the albuginea; in its posterior and superior parts, these two tunics make one; consequently the testicle is, as it were, affixed to the posterior and superior part of the cavity of the sac of an hydrocele, and consequently, the water or fluid can never get quite round it. This being the state of the case, the operation ought always to be performed on that part of the tumour where the two coats are at the greatest distance from one another, and therefore, where the fluid must be accumulated in the largest quantity, and never on that part of it where the fluid cannot possibly be. The consequence of acting otherwise, must not only produce a disappointment, by not reaching the said fluid; but may prove, and has proved highly, and even fatally mischievous to the patient.” (Pott on the Hydrocele.) In short, it must be plain to every person, who has any knowledge of the present disease, that in all common cases, the proper place for making the puncture is at the lower and fore-part of the scrotum. It ought, however, to be understood, that surgical writers make mention of examples, in which the hydrocele has an unusual shape, in consequence of the pressure of a bag-truss, &c. Instances have been observed, in which the hydrocele was of an horizontal oval form, with the testicle plainly perceptible underneath at the bottom of the scrotum. In all such cases, the surgeon should first examine the situation of the testicle, and choose a place for making the puncture, where there will be no risk of injuring the latter part. The oval sac of an hydrocele of the left tunica vaginalis, has been known to have so oblique a position, that its bottom could be felt on the right side of the raphe at the inferior part of the scrotum, while its upper end lay on the left side of the scrotum, near the abdominal ring. This hydrocele of the left tunica vaginalis was tapped on the right side of the raphe at the bottom of the scrotum, and as soon as half the fluid had been discharged, the sac became situated quite on the left side of the raphe, the exit of the water ceased, and the cannula fell out. Even in cases where the swelling has had the ordinary shape, the testicle has occasionally been seen at the fore-part of the tumour. Hence practitioners should remember, that making the puncture at the lower and anterior part of the hydrocele is not a matter of course; and that it is their duty, in every instance, to endeavour to ascertain the precise situation of the testicle, in order that it may be more certainly avoided. Richter's *Anfangsgrunde*, &c. Band. 6, p. 73.

After letting out the water of an hydrocele by the palliative operation, it is prudent to cover the puncture with a bit of lint and a plaster, to keep up the scrotum with a bag-truss, and direct the patient to keep himself quite still for the first twenty-four hours afterwards. The bag-truss gently—

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gently supports the suddenly relaxed parts, and thus tends to prevent any painful swelling of the testicle, as well as hemorrhage in the tunica vaginalis, and too rapid an accumulation of the water again. Although no painful and inflammatory symptoms usually follow the operation, and the orifice heals in a few hours, like that made in blood-letting, and this notwithstanding the patient neither pays attention to regimen, nor abstains from his ordinary pursuits; yet the contrary sometimes happens. We learn, on the authority of Mr. Pott, that in some habits and circumstances, the puncture inflames and festers. Such festering is generally superficial only, and is soon quieted by any simple dressing; but it is sometimes so considerable, and extends so deeply as to affect the vaginal coat, and by accident produce a radical cure. Mr. Pott has likewise seen it prove more troublesome, and even fatal, when the circumstances of the patient, and the case have been particular. The accounts delivered to us by surgical authors confirm, that in persons of bad constitutions, pain, inflammation, and fever are apt to succeed, if the scrotum be too much rubbed or agitated. A patient, immediately after the operation, went several miles, and brought on by this means so high a degree of inflammation, swelling, and fever, that the consequence was a radical cure of the hydrocele. (Default, *Journal de Chirurgie*, tom. i.) Theden has recorded a case where similar symptoms were produced, only in a more severe form. Upon the whole, however, the palliative operation is not very liable to any disagreeable consequences. If pain, inflammation, and fever occasionally arise, it almost always will be found, that the patient has been guilty of imprudent exertion, or that the habit is exceedingly bad. In some instances, these symptoms are to be ascribed to the circumstance of the end of the cannula having been rubbed against the testicle during the escape of the fluid. An hæmatocèle, which is occasionally produced after the operation, proceeds either from the great determination of blood to the relaxed parts, or from an actual injury of one of the blood-vessels of the tunica vaginalis with the lancet or trocar. When, from the colour of the water, there is reason to apprehend that a vessel has been wounded, the surgeon may often succeed in preventing any serious collection of blood, by taking care to cover the scrotum with cold applications, and support it well with a bag-truss. Should he however be unable to hinder such collection from taking place, both the hæmatocèle and hydrocele may be radically cured by laying open the cavity of the tunica vaginalis. See HÆMATOCELE.

It is said, that when the tunica albuginea is unfortunately wounded with the point of the trocar, the substance of the testis is protruded through the puncture of that membrane, and forms a swelling which may create a necessity for castration. When the trocar happens to injure any varicose blood-vessels of the integuments of the scrotum, an extravasation of blood in the cellular substance may ensue, and end in ulceration, unless speedily dispersed. But while we are noticing these occasional evils, let us not forget to state, that the palliative operation sometimes proves beneficial beyond expectation, no water collecting again, and the patient remaining for ever afterwards free from the disease.

Wiseman and others have advised deferring the puncture till a pint of fluid has collected. On the contrary, Mr. Pott expresses his decided opinion, that when the water is in sufficient quantity to keep the testicle from the instrument, there can be no reason for deferring the discharge; and he contends, that the single point on which this argument ought to rest is this: whether the absorbent vessels, by which the extravasation should be prevented, are more likely

to re-assume their office, while the vaginal coat is thin, and has suffered but little violence from distention; or after it has been stretched and distended to ten, or perhaps twenty times its natural capacity; and by such distention is, like all other membranes, become thick, hard, and tough? Mr. Pott believes the probability so much more on the side of the former, that he should never hesitate a moment about letting out the water, as soon as he found that the puncture could be made securely. And, from what has happened within the small circle of his own experience, he is inclined to think, that if it was performed more early than it generally is, it might sometimes prevent the return of the disease.

Although we have given a general preference to the trocar, as the best instrument for tapping hydroceles; we can conceive a few instances in which the employment of a lancet for the purpose might be attended with advantages. Supposing the surgeon has to operate upon a very small hydrocele, which contains only a little quantity of fluid, it is better to use the lancet. The trocar must always be introduced more deeply than the latter instrument, and is therefore more apt to injure the testicle. In such a case, also, there is no danger of the lancet occasioning an hæmatocèle, since the vessels of the tunica vaginalis have suffered no dilatation. On the same principle, the lancet ought to be preferred in all cases where the hydrocele is complicated with either a hernia, or an exceedingly large sarcocele, and it is impossible to ascertain the exact position, size, and quantity of parts in the scrotum.

Sir James Earle thinks, that the palliative operation ought to be performed at least once on those who determine to submit to the radical method of cure, as it enables the surgeon to examine the state of the testicle, and affords an opportunity of operating in the other way afterwards, when the tunica vaginalis is not more distended than is proper. On the Hydrocele, p. 13, edit. 2.

We shall conclude the observations which we have to offer on the palliative operation, with noticing the circumstance of the fluid sometimes not flowing through the cannula of the trocar, or of escaping only just at first, and then stopping, notwithstanding the introduction of a probe. This occurrence may depend on various causes. The fluid in the tunica vaginalis is occasionally as thick and viscid as white-of-egg. (Warner.) Sometimes the cavity of the tunica vaginalis is divided by several partitions formed of a loose sort of cellular substance. In certain instances, the cavity has appeared to be filled with hydatids, or transparent cysts. Should the patient be in a fit state for the radical operation, it would undoubtedly be right, in a case of the foregoing description, to perform it at once. The plan by injection being here quite inapplicable, the surgeon should introduce a director through the annula of the trocar, withdraw the tube, and, with the aid of the director and a curved bistoury, lay open the cavity of the tunica vaginalis.

Of the Radical Method of Treatment.—The great object in the radical operation is to produce an entire obliteration of the cavity of the tunica vaginalis, which is the seat of the disease, and thus render a recurrence of the complaint impossible. This purpose has been fulfilled in two manners, *viz.* by cutting the whole of the tunica vaginalis away, or by exciting such an inflammation of this membrane as makes it universally adherent to the testicle. In the latter method, it is a principal indication to have an effectual, yet not too violent a degree of inflammation. When it is too slight, or does not extend to the whole of the membrane, it is ineffectual. In the first of these circumstances no cohesion follows, and the operation completely fails; in the second, the

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tunica vaginalis only becomes adherent to the testicle at those places where the inflammation exists, while elsewhere a cavity remains, in which the fluid re-accumulates. When there are several such parts, to which the inflammation does not extend, the hydrocele recurs in the form of several distinct swellings, and the water is contained in separate cysts. On the other hand, the inflammation is too violent, when it is such as brings on severe febrile symptoms, and affects the testicle even more than the vaginal coat. The means employed to raise the necessary inflammation ought always to be calculated to affect the latter membrane chiefly, and the testicle as little as possible; a considerable inflammation of this gland not being essential to the radical cure of a hydrocele, and being invariably attended with more severe symptoms, than those which result from an inflammation of the vaginal coat. With the preceding intentions, various methods of operating have been practised, the chief of which we shall now proceed to describe.

Incision.—In this plan, an incision of some length is made through the integuments of the scrotum and the tunica vaginalis, by which means, not only the fluid is discharged, but such inflammation excited as ends in a cohesion of the whole of the vaginal coat with the testicle, and, of course, the recurrence of the hydrocele is effectually prevented. This mode of effecting the radical cure of the hydrocele is the most ancient of all, having been described by Celsus. The operation is performed as follows: the point of a straight bistoury is to be placed on the fore-part of the swelling, while the back of the instrument is to rest against the index-finger of the surgeon's left hand. The knife is to be pushed into the tumour, and an opening of such size immediately made as will let the operator introduce completely into the tunica vaginalis his finger, on which the further course of the bistoury is to be directed. Directly the first puncture is made, the fluid is apt to gush out all on a sudden, leaving the tumour collapsed, and the operator incapable of easily introducing the instrument, with which he purposes to enlarge the first wound. In order to prevent any inconvenience of this kind, surgical authors direct us to place the end of the left index finger close behind the point of the knife, and to take care to make it pass into the wound immediately behind the latter instrument. This being done, the surgeon, with the aid of his left thumb, can take hold of the involvements of the hydrocele, and hinder a closure of the opening just made. A blunt-pointed crooked bistoury is then to be introduced, and, guided by the fore-finger, will serve for enlarging the incision downwards and outwards, in such manner, that the wound may extend down the middle of the front of the tumour to its lower part. When the hydrocele is small, or complicated with a sarcocele, or hernia, or when any doubts exist concerning the real nature of the case, writers advise us to let the first incision only divide the integuments of the scrotum, and then to open the tunica vaginalis separately.

Should any modern practitioner choose to perform this operation, he would find it very advantageous to make the first opening into the hydrocele at the upper part of the swelling, as all the fluid would then not make a sudden escape, so as to occasion a collapse of the tumour, and difficulty in effecting the necessary dilatation of the wound.

The incision must be carried to the bottom of the tunica vaginalis, or else blood and matter will be very likely to lodge there, and create trouble.

The cavity of the hydrocele having been thus laid open, is to be dressed with soft pieces of lint; these are to be covered with a pledget, and a suspensory, or T bandage.

The dressings are to be changed at proper intervals, until the part is completely healed.

Much more might be said concerning this method of effecting the radical cure of the hydrocele; but we suppress many particulars, conceiving them to be superfluous in the present almost exploded state of the operation. Whoever will take the trouble to read the accounts of this plan, as delivered to us by surgical writers, will find that, according to Monro and Acrell, its consequences are sometimes dangerous, and even fatal, while, in other instances, the inflammation of the testicle has been so violent, as to end in suppuration. (See Richter's *Anfangsgr.*, &c. Band 6. p. 92.) Hence it has been commonly found proper to employ a strict antiphlogistic treatment, which is acknowledged to have occasionally defeated the very object of the operation, by preventing the kind of inflammation necessary for the completion of the radical cure. Thus, severe as the method is, it is uncertain, and its failures are confirmed by the testimony of Bertrandi, Sabatier, and sir James Earle. We will not dwell upon the objections which might be urged against the practice, from the disagreeable and dangerous bleedings which sometimes follow the operation, or the painful excoriations which frequently arise. The method has no advantage over a milder operation, which we have to recommend, and it is altogether severe, as well in its performance as in its consequences. We should, however, have deemed it our duty to enter into a more particular detail of the reasons against the plan, had not the disrepute into which it has now sunk rendered this task unnecessary.

Extirpation.—It sometimes happens, after performing the foregoing operation, that the tunica vaginalis is found in a thickened and indurated state. Certain writers and practitioners have fancied, that when this is the case, such an inflammation as is essential to the radical cure will not take place. Under this impression, they recommend scarifying the inner surface of the tunica vaginalis, or even cutting this membrane entirely away. Many eminent surgeons of past times have adopted the latter proceeding with success, as for instance, Douglas, Saviard, White, Gooch, and Louis. Indeed, it was remarked by Bertrandi, that the symptoms are generally milder after the excision of the tunica vaginalis, than after a mere division of it. The method consists in dissecting away portions of the membrane, after laying open its cavity, care being taken not to cut too closely to the testicle, for fear of exciting a violent degree of hernia humoralis.

Certainly we can conceive a case in which the tunica vaginalis may be so diseased, as to justify the tedious and painful plan of removing a part of it by dissection. But an instance of this kind must be very uncommon; and the observations of sir James Earle confirm, that the radical cure, by means of an injection, can be accomplished without any excision, notwithstanding the tunica vaginalis is thickened. The method of extirpation, however, is not only objectionable, as being productive of avoidable pain; it is liable to bring on troublesome hemorrhages both during and after the operation, and to be followed by fistulae and fistulous abscesses, which are a very long time in healing.

Tent.—Experience having shewn that, in many instances, moderately stimulating the tunica vaginalis will bring on a sufficient inflammation of this membrane to effect a radical cure; and likewise, that the common palliative operation, done with a trocar, is sometimes followed by the same beneficial consequence; attempts have been made to free the patient permanently from the disease by milder methods than those which we have just now been describing. After the palliative operation with a trocar, Monro suggested leaving

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the cannula in the wound until the necessary inflammation had been excited, and he assures us, that in this manner he often accomplished a radical cure with the utmost success.

Warner used to puncture the swelling with a lancet, and, after letting out the fluid, introduce into the opening a tent, which was left there until an adequate degree of inflammation had come on.

The last mode of operating has been the most extensively adopted. It is executed as follows: a puncture is made with an abscess-lancet in the anterior and inferior part of the tumour, and the fluid discharged. A tent is then introduced into the aperture, so as to lie betwixt the tunica vaginalis and the testicle. The opening is next covered with a pledget. The wound in the integuments and vaginal coat ought to be about an inch and a half in length. We are also advised by some authors to introduce the tent while the water is making its escape; as, in consequence of the way in which the sac occasionally collapses, the operator may afterwards have trouble in getting the tent into the tunica vaginalis, and, perhaps, force it into the cellular substance of the scrotum, instead of the proper situation, in which circumstance the attempt at a radical cure would fail. The tent ought to be at least an inch long, have a ligature attached to it, and be made either of sponge, or a soft dossil of lint. The latter can be best introduced by means of a probe. A fresh tent should be put in every day, and the length and thickness of it may be gradually diminished. This mode is to be followed up, until an effectual inflammation is excited, which commonly happens on the second or third day, though sometimes later. The tent is afterwards to be discontinued, and an emollient poultice applied. In general, suppuration very soon commences. Occasionally abscesses form, and require to be opened. Frequently the symptoms are so mild that the patient scarcely finds it necessary to keep his bed; but sometimes they are so severe, that a rigorous employment of antiphlogistic treatment is indispensable.

Franco is said to have made the first mention of the cure by the tent. The method has been practised by a long list of eminent surgeons of later date; but it has now been abandoned by all practitioners in this country. Mr. Pott objected to the cannula, that it was very inconvenient, as, by reason of its inflexibility, it hurt the testicle whenever the patient moved; consequently he preferred a tent or bougie; but, according to his account, the method is attended with a considerable degree of uncertainty.

Cautic.—The ancients employed caustic for the purpose of forming in the tunica vaginalis such an opening as would extend the whole length of this membrane. The common consequence of the method was a train of severe and violent symptoms, and, on this account, the practice was for a long while entirely given up. It was afterwards revived, by reason of the favourable reports made of it by Else, Acrell, &c.; but these later surgeons did not use the caustic exactly in the same way as the old surgeons, as their object was not to make an opening through the vaginal coat with it, but only to irritate the membrane, and make it inflame. Caustic has this effect, when employed according to the following directions.

The caustic must be applied to the inferior and anterior part of the scrotum, and, in order that it may not act too extensively, the part should be covered with a piece of plaster, in which a hole has been cut. When the hole is about as large as a half guinea, the eschar produced by the caustic will generally equal a guinea in size, which, according to Mr. Else, in all common instances, will be quite large enough. Other writers have advised making a more exten-

sive slough, and to proportion its size, in some measure, to that of the swelling, and to the degree of hardness and thickness with which there may be reason to suppose the tunica vaginalis affected. The caustic which has been mostly used is the kali purum blended with quicklime, and made into a paste. Acrell made the suggestion of mixing opium with the caustic, with a view of lessening the pain of the application.

In attempting the radical cure of the hydrocele by this method, it was the design of the surgeon to make the action of the caustic extend through the integuments and cellular substance, and affect the surface of the tunica vaginalis sufficiently to make this membrane inflame. The caustic-paste was generally left on about six or seven hours, and after its removal a pledget was applied, the patient enjoined to keep quiet in bed, and an antiphlogistic regimen directed. The denuded tunica vaginalis did not often burst of itself, or at least not till a considerable time after the detachment of the slough, so that it was generally necessary to make a puncture with a lancet. It was accounted a matter of much importance that the fluid should not be discharged too soon after the application of the caustic, lest the very purpose of the operation should be defeated. About the eighth or tenth day was usually reckoned the best time for making the opening; but the criterion of the proper period was when the patient began to experience a sense of heaviness and heat about the scrotum, and the swelling was every where painful and inflamed.

When the inflammatory symptoms prevailed, it was customary to apply emollient poultices. These complaints were often exceedingly severe, and attended with pain in the back and abdomen. Bleeding was sometimes required for their alleviation. Surgeons, indeed, found it prudent to prepare their patients for this mode of treatment by diet and medicines, and, after the caustic had been applied, a strict observance of an antiphlogistic plan was deemed generally advisable.

The method, however, was apt to fail when the caustic did not act deeply enough, and the requisite inflammation could not then be excited, without repeating the painful application again.

The treatment of the hydrocele with caustic has now quite fallen into disuse, as being attended with an avoidable destruction of parts, a degree of efficacy not equal to that of an injection, and often creating a painful and ill-conditioned sore, besides being subject to other inconveniences obvious in the foregoing account.

The desire of Mr. Else to regulate the caustic with such precision as just to burn down to the tunica vaginalis, or just through it, could not, in general, be realized; and the opening could only be completed by employing a lancet, or using the caustic again.

Seton.—The seton was preferred by the celebrated Mr. Pott, as the means of effecting the radical cure of the hydrocele; and, next to the injection, this, perhaps, is to be considered as the most eligible method. The swelling is to be first punctured with a trocar in the ordinary place; an eye probe is next to be introduced through the cannula into the cavity of the hydrocele, and its end pushed to the upper and anterior part of the tunica vaginalis. Just where this extremity of the probe is felt, the surgeon is to make an incision for the passage of the instrument, which will convey with it the seton through the cavity of the tunica vaginalis. But, as the probe is apt to slip away at the moment of cutting upon it, and the skein of silk is liable to rub against the testicle, when drawn through the cavity of the disease, the method

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method adopted by Pott is undoubtedly that which deserves imitation. The instruments used by this consummate practitioner, consisted of a trocar, the cannula of which was about a quarter of an inch wide; a seton cannula, which was made of silver, was about five inches long, and was just small enough to pass with ease through the cannula of the trocar; and, lastly, a probe six inches and a half in length, furnished at one end with a fine steel trocar-point, and, at the other, with an eye which served to carry the seton. The seton was composed of as much white sewing thread as would fill the cannula, and yet pass through it with facility. The operation was performed in the following way. The tumour was punctured in the common manner with a trocar, and the fluid discharged. The end of the seton cannula was then introduced, through the cannula of the trocar, to the upper and fore-part of the cavity of the tunica vaginalis, and there pressed against the integuments, so as to be externally perceptible. The needle, provided with the seton, was next conveyed through the seton cannula, and pushed from within outwards through that part of the scrotum, with which the end of the tube was in contact. The skein of thread was thus drawn through the cavity of the hydrocele, and both the cannula, having fulfilled their office, were taken away.

The operation occupied but a short time, and was productive of no severe pain. The patient was generally put to bed immediately afterwards, and took about twenty, or five and twenty drops of the tinctura thebaica. On the third day the scrotum was usually affected with swelling and inflammation, symptoms which were soon appeased by means of a bag-truss, emollient poultices, clysters, and a low regimen. The inflammation commonly subsided about the tenth day. From this time, the seton was lessened every day by withdrawing some of the threads, and the discharge of matter from the openings was generally inconsiderable. Pott believed, that, in this method, the tunica vaginalis did not suppurate, but was only made to inflame and become adherent to the testicle. Other surgeons, however, have sometimes found the plan tedious, the seton not becoming loose for more than a fortnight, and large abscesses being occasionally produced, which flood in need of being opened. Upon the whole, however, the seton may be considered as one of the mildest and surest modes of cure, and, perhaps, ought to be preferred to all the other plans, excepting one, of which we shall now speak.

Injection.—The method of injecting into the cavity of the tunica vaginalis a stimulating fluid, for the purpose of bringing on an inflammation of this membrane, and thereby a radical cure of the hydrocele, is by no means one of modern invention. Of late years, however, it has been more particularly practised, and the manner in which it has been recommended, and perfected by sir James Earle, together with its confirmed mildness and success, has almost entirely set aside all the other modes of cure. According to the statement of the preceding author, even the celebrated Mr. Pott lived to express his approbation of the method, notwithstanding the great partiality which he has evinced in his writings to the seton.

Many different kinds of injection have been employed for the radical cure of the hydrocele. The principal are wine mixed with water; a solution either of two grains of kali purum, or of two grains of cuprum vitriolatum, in an ounce of water; lime-water, either alone, or containing hydrargyrus muriatus; a strong solution of alum, or acetite of lead; brandy diluted with water; an infusion of red roses, or of oak-bark, &c. However, at present, the injection universally employed in this country is composed of port wine

and water, in the proportion of two parts of the former to one of the latter ingredient. On the continent, it is not uncommon to use five parts of claret, or Burgundy-wine, to one of water.

We learn from sir James Earle's treatise, that he commonly uses about two-thirds of port wine to one of water. When the parts appear insensible, and no pain at all is produced on introducing the first quantity of the injection, he withdraws the syringe, and increases the proportion of wine. On the other hand, when the complaint is recent, and the parts irritable, he increases the proportion of water, the strength of the injection, in fact, being principally regulated by the degree of pain experienced by the patient. The syringe preferred for this operation is made of elastic gum. The pipe formerly employed by sir James Earle was furnished with a stop-cock, in order to hinder the injection from making its escape, whenever it was necessary to remove the syringe. Of late years he has used a pipe, one end of which fits the cannula of the trocar, while the other is adapted to receive the neck of the elastic bottle; and instead of a stop-cock, which required a hand to turn it, and was therefore found inconvenient, the pipe is furnished with a valve, which allows the injection to pass into the tunica vaginalis, but not back again. The operation is generally performed as follows: the hydrocele is first tapped with a trocar at its anterior and inferior part, and after all the fluid has been discharged, the cavity of the tunica vaginalis is to be distended to its former dimensions with the vinous injection, which, upon an average, is to be kept in the part about five minutes, after which it may be let out through the cannula. The patient commonly feels pain in the groin, and about the kidneys, on the injection being introduced; a circumstance which is rather desirable, as it shews that the stimulus of the fluid is likely to have the wished-for effect of exciting the necessary degree of inflammation.

When the hydrocele is exceedingly large, sir James Earle recommends practitioners to be at first content with merely discharging the fluid, and to take a future opportunity, when the tumour is smaller, for putting into practice the attempt at a radical cure.

The experience of the same gentleman has proved, that the injection is adequate to the accomplishment of a permanent cure, even though the tunica vaginalis may be indurated and thickened.

The treatment of hydroceles with the vinous injection is now generally acknowledged to be the mildest and most certain method, and hence it is universally practised by all the most eminent surgeons of this country, in preference to the other plans. One great advantage attending it must be immediately obvious,—it does not commonly occasion any suppuration or sore; and it is so efficacious, that many very experienced surgeons have never known an instance of its failing.

It remains for us to give one caution; let every operator be sure that the end of the cannula is in the tunica vaginalis before he ventures to introduce the injection. It has sometimes happened that the cannula has slipped out of the puncture in that membrane, just after the fluid has been discharged, so that its extremity became situated in the cellular substance of the scrotum. Now when the surgeon injected the wine and water, this liquid, instead of passing into the cavity of the hydrocele, was forced into the cellular membrane. Mistakes of this kind have brought on violent attacks of inflammation, abscesses, and sloughing, without there being any chance of a radical cure of the hydrocele. Whenever such an accident happens, it is considered best

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to defer the operation till the fluid of the hydrocele is accumulated again in sufficient quantity.

No objection can be reasonably urged against the method, on account of the preceding accident, which is easily avoidable, and is always imputable either to awkwardness or negligence.

After the operation, the puncture is to be covered with a piece of lint and soap-plaster, and the scrotum is to be supported in a bag-truss. As soon as the parts begin to inflame and become tense and painful, then an emollient poultice is to be applied to them, care being taken to employ the suspensory, keep the patient on an antiphlogistic regimen, and quiet in bed. If the inflammation should appear to exceed the requisite degree, leeches may be put on the scrotum, the patient gently purged, and even bled in the arm.

Congenital Hydrocele of the Tunica Vaginalis.—The disease is so named when the tunica vaginalis, besides containing a preternatural quantity of fluid, is unclosed above, so as to have an open communication with the cavity of the abdomen. In most cases the fluid, in all probability, is secreted by the peritoneum, and then descends by its weight into the scrotum. This form of the hydrocele has escaped the notice of the generality of surgical writers. The French surgeon, Desault, however, has given a description of it, and we find that he was in the habit of effecting a radical cure by means of a vinous injection. The nature of the disease cannot be difficult of discrimination, when the surgeon adverts to the transparency and fluctuation of the tumour, the absence of pain, and the disappearance of the swelling in the recumbent posture, or on pressure being made.

Desault used to cure the complaint in the following manner. After letting out the fluid with a trocar, he took care to reduce any viscera which happened to be protruded, and directed a confidential assistant to close the communication between the abdomen and tunica vaginalis by pressure. The injection was then introduced through the cannula into the cavity of the hydrocele. In this way, Desault not only cured a boy of a hydrocele, but also of a hernia, with which he was afflicted. *Œuvres Chirurgicales de Desault, par Bichat, tom. ii.*

Hydrocele of the Spermatic Cord.—In this case the fluid is contained in the cellular substance which surrounds the spermatic vessels, and forms what is sometimes named the common sheath of the cord. The water is not diffused in all the cellular membrane of the scrotum. Some writers think that the complaint might, with greater propriety, be called an œdema of the spermatic cord. However this may be, it is certain that this species of hydrocele is the least frequent. In external appearance it is subject to considerable variety, according to the stage in which the disease presents itself. In the early state, the swelling merely surrounds the lower part of the spermatic cord, and has no connection with the abdominal ring, the upper portion of the cord remaining quite free. The shape of the tumour is generally pyramidal, having a kind of apex above, and a broad base below. The testicle can be quite plainly felt just below the swelling. The tumour is unattended with pain, has a doughy feel, and allows its shape to be altered by pressure. The scrotum retains its natural corrugated appearance, being only somewhat more full and distended on the affected side than the other. In a more advanced state, the swelling undergoes two alterations; it ascends up to the abdominal ring, so that the upper portion of the cord can no longer be felt; and it descends so far down by the side of the testicle, that this gland is likewise completely concealed. In the extreme stage of the disease, not only the cellular substance which surrounds the spermatic cord in the scrotum is distended with water, but

even that which forms the investment of the spermatic vessels in their course from the inner to the outer opening of the abdominal ring.

The first stage of the hydrocele of the spermatic cord may easily be distinguished from all other tumours of the scrotum, for there are none which bear so much resemblance to it as to be readily mistaken. But in the very advanced period of the disease, the swelling has much of the appearance of an omental hernia. It has the same soft flabby feel; it passes up into the abdominal ring; and the latter opening is wide and dilated. When the patient has been long in a standing posture, the water descends from the cellular substance which surrounds the spermatic vessels within the ring, and passes into the cellular membrane, with which they are invested below this aperture; consequently, the external swelling undergoes an increase of size. On the other hand, when the patient lies down for a time, the tumour diminishes. It may also be lessened by external pressure, and even nearly pushed within the ring. Likewise, when the patient coughs, or holds his breath, the tumour swells and becomes larger. Such symptoms correspond with those of an omental hernia. The two diseases, however, may, with a little attention, be easily discriminated from one another. By adverting to the early stage of the disease, and recollecting that the swelling first made its appearance at the lower part of the spermatic cord, had then no connection with the ring, and afterwards gradually ascended into this opening, the surgeon may know with certainty that the case cannot possibly be an omental rupture. A careful examination of the swelling will also discover the difference. An epiplocele communicates the feel of several lumps or masses, and is softer in some places than others. On the contrary, the hydrocele of the spermatic cord has every where a smooth uniform feel. Its shape also undergoes alterations according to posture. When the patient observes an horizontal position, and the scrotum does not hang down, the hydrocele becomes oblong, equally thick, and cylindrical. But when the patient continues in a standing posture, and the scrotum is unsupported, the swelling becomes pyramidal, that is to say, broad below and thin above. Its shape may be altered by making pressure on it for a little while. When the lower part is thus pressed it becomes thin, while the upper portion increases in thickness; and *vice versa*. Although an omental hernia alters in size, it undergoes no change of shape, at least none that is so plain and durable. When the horizontal posture or external pressure is long continued, the hydrocele of the spermatic cord, like the epiplocele, becomes smaller, or even appears to pass entirely within the abdominal ring. Like this hernia, also, it seems to descend again, when the patient continues erect, or the pressure is removed; but still a difference is observable in the modes in which the two diseases return. For on applying two fingers to the abdominal ring, at the period when the hydrocele is ascending or descending, nothing can be felt to pass up or down; but if the case be an epiplocele, the viscera can be distinctly felt to pass into, or out of, the abdominal ring. The descent and reduction of an omental rupture are moreover observed to happen more quickly than the ascent and falling down of the fluid of the hydrocele. When the latter tumour is large, the patient suffers shooting pains in the loins, at the period of urging the fluid upwards by pressure.

If the disease has made considerable progress, a fluctuation may be distinguished in the swelling, upon laying one hand upon its upper part and the other below, and making pressure with the first downwards, and with the second upwards, in an alternate manner. The abdomen, in the vicinity

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nity of the ring, is alleged to appear sometimes preternaturally prominent, on pressing the fluid upwards.

Lastly, it deserves attention, that, in the hydrocele of the cord, no complaints of the stomach and bowels prevail, as they usually do in cases of epiplocele.

The hydrocele of the spermatic cord is generally a local disease, which proceeds from causes altogether local. Sometimes it arises from wearing an ill made truss. Children are occasionally born with it. (Delatre *Journal de Médecine*, t. 32.) In certain instances it appears to originate from collicveness. Frequently it is the consequence of a general dropsical affection of the system.

Should the disease depend upon internal causes, it is the business of the surgeon to endeavour to remove them. When it arises from local causes, a surgical operation is commonly necessary for its cure, discutients very seldom being found effectual. It is to be observed, however, that when this kind of hydrocele is small, it is hardly an object of surgery; the pain or inconvenience which it produces being so little, that few people would choose to submit to an operation to get rid of it; and (as Pott says) it is very seldom radically curable without one. But when the hydrocele is large, or affects the membrane within the abdominal ring as well as without, it becomes an apparent deformity, is very inconvenient both from size and weight, and the only method of cure which it admits is far from being void of hazard.

Authors describe two operations for the relief of this disease, one is called palliative, and consists in making a few punctures with a lancet in the tumour; the other is named radical, and is executed by making an extensive incision into the swelling.

The generality of patients are content with the relief derived from the employment of a suspensory; and, except in bad cases, an operation seems scarcely advisable.

Encysted Hydrocele of the Spermatic Cord.—The fluid is sometimes observed to be contained in a preternatural cyst formed in the cellular membrane, and resembling such as commonly compose the investment of encysted tumours. This species of hydrocele is mostly met with in children and young subjects; and not often in adults and old persons. The swelling is most frequently situated about the middle of the spermatic cord, and is more or less of an oval shape. In some cases it lies close to the cord; in others it is so distant from this part, that the finger may be put between them. Below the tumour is the inferior portion of the spermatic cord, together with the testicle; while above, the upper part of the cord can be plainly felt to be quite free, so that the swelling manifestly has no connection with the abdominal ring. But there are examples in which the disease acquires such magnitude, that it mounts upwards as far as the ring, and descends down to the bottom of the scrotum. In this circumstance the case may somewhat resemble the hydrocele of the tunica vaginalis. The testicle, however, can always be distinctly felt on the outside of the swelling, a fact which immediately makes an experienced surgeon acquainted with the nature of the disease. A mistake would be attended, indeed, with no serious ill consequences, the treatment of both tumours being similar. It may be remarked, likewise, that the swelling is completely circumscribed, has a very even surface, and is entirely free from pain. A distinct fluctuation cannot often be felt.

In young subjects, the tumour may frequently be dispersed by external means; but in ordinary cases a surgical operation is indispensable for the cure of the disease, and is of two kinds; one palliative, the other radical. The first consists in merely discharging the fluid with a lancet or trocar. Care must be taken to avoid injuring the spermatic

cord. Here a lancet is mostly preferred to a trocar. In children, tapping the tumour is often productive of a radical cure. The cyst is frequently found filled with a fluid of so viscid a quality, that it will not pass through the cannula of a trocar.

The radical operation, formerly practised, was to lay open the swelling its whole length, and cut away as much of the cyst as could be accomplished, without risk of wounding the spermatic vessels. The wound was afterwards dressed with digestive applications. Modern experience proves, however, that this case can be radically cured with the port wine injection, just like the hydrocele of the tunica vaginalis, and as the method is free from all severity and danger, it certainly deserves to be recommended. Sir James Earle assures us, that he has successfully treated the disease in this way.

In certain examples, two or three separate cysts, filled with fluid, are met with in the cellular membrane of the spermatic cord or scrotum. While small, they can easily be distinguished from each other; but when they have acquired a considerable size they lie so close together, that they seem like one single uniform swelling. Furrows, however, may frequently be felt between them, and some information may be obtained from a recollection of the early stage of the disease. But in operating, the nature of the case cannot fail to shew itself, it being impossible to discharge all the fluid, unless an opening be made into each of the cysts. Every operator should use the utmost care not to injure the testicle and spermatic cord, as these parts have no fixed situation with respect to the tumours. The place of the testicle may, indeed, be often ascertained beforehand, by the peculiar pain which is occasioned by pressing it.

Encysted hydroceles have occasionally been remarked in women. They are mostly situated in the vicinity of the groin (*Journal de Médecine*, t. 82.) or else in one of the labia. Authors advise us to treat them just like other encysted hydroceles. We see no reason why they should not be extirpated in the manner of common encysted tumours.

Hydrocele of Hernial Sacs.—Hernial sacs occasionally contain, besides the protruded viscera, a quantity of fluid, which is frequently so copious, that the bowels cannot be felt, the water alone being perceptible, and the case apt to be mistaken for a common hydrocele of the tunica vaginalis. But the diagnosis can be attended with no difficulty, when the viscera admit of being reduced. However, in some cases, the protruded parts are adherent to the neck of the sac in such a way, that, besides being incapable of reduction, they prevent the fluid from passing up into the cavity of the abdomen. In this circumstance, the surgeon may fall into error, though a correct judgment can always be formed by paying a little attention. In the early state the disease has commonly been nothing more than an ordinary intestinal or omental hernia. The recollection of this fact throws much light on the nature of the case. The swelling at its commencement is always connected with the abdominal ring. The testicle can be plainly felt at the under and lower part of the tumour. The patient is likewise afflicted with the usual symptoms of an enterocele or epiplocele. Were any of the operations, employed for the cure of common hydroceles, erroneously practised in the preceding case, excepting that of merely letting out the fluid, the consequences would be highly perilous, and, in all probability, fatal.

When a hernia has been reduced, and the descent of the bowels again effectually hindered by the gradual closure of the neck of the sac, a collection of fluid sometimes takes place in the cavity of the latter part. We have already de-

scribed the congenital hydrocele, where water collects in the tunica vaginalis, and the sac has an open communication with the abdomen. We have further recorded the success with which Default freed a lad not only of such a hydrocele, but also of a hernia, by the employment of an injection. Certainly, the hydrocele of a hernial sac, when the neck of the latter part is closed, may be safely treated just like an ordinary hydrocele. But should the sac communicate with the abdomen, or contain any protruded parts, such treatment would be rash and almost certainly fatal.

HYDROCELODES ISCHURIA, in *Surgery*, a retention of urine, produced by a rupture of the urethra. The term is derived from ἵδωρ, *water*, and κτλωδεις, attended with swelling.

HYDROCEPHALUS, in *Medicine*, from ἵδωρ, *water*, and κεφαλον, *cephalon*, the *head*, signifies strictly *dropsy*, or *water*, in the *head*.

For the knowledge that we possess, relative to the nature and characteristic symptoms of effusion of water within the cranium, we are indebted almost entirely to modern observation. Hippocrates, Aëtius, Celsus, and some other ancient physicians, speak of the presence of water between the cranium and the surface of the brain, and of an external hydrocephalus, or dropsy of the teguments of the head; but the writers of the 16th century first mention the occurrence of water in the ventricles of the brain itself. (See *Mercurialis*, *Opuscula Aurea*, lib. de Morb. puerorum.) After this occurrence had been observed by a number of writers, and had even been mentioned by the celebrated Boerhaave, the symptoms, by which it might be distinguished from other diseases of the brain, remained still unknown. The disorder was briefly and inaccurately described in the Memoirs of the Academy of Sciences at Paris, for the year 1718, by M. Petit; but it was not until the publication of a posthumous essay of Dr. Whytt, professor of medicine at Edinburgh, in 1768, that a well-connected history of the symptoms accompanying the effusion of water into the ventricles of the brain was clearly made out, or that hydrocephalus was known as a distinct disease. Immediately after this publication, Dr. Fothergill, whose sagacity had already detected most of the peculiarities belonging to the disease, read a paper on the subject to a medical society in London, which was published in 1772 (see *Med. Observ. and Inquiries*, vol. iv. art. 3.), since which period the disease has been well known to medical practitioners.

Before the appearance of Dr. Whytt's Essay, the term *hydrocephalus* had been almost entirely confined to a chronic affection, analogous in its causes and progress to other forms of dropsy in the human body. This disorder, commencing soon after birth, before the sutures of the skull are united, proceeds very slowly, continuing even for years, until the head becomes enormously large, without producing any very extraordinary symptoms. After death, which is usually preceded by convulsions, the brain is found so exceedingly distended by water within the ventricles, as to be rendered extremely thin; or, on the other hand, so much oppressed by the water, collected between it and the skull, as to assume rather the appearance of a small gland than that of a brain. This form of the disease, or the *chronic hydrocephalus*, we have described under the article, *Dropsy in the head*. The variety of the disease, to which our attention is at present directed, differs altogether from the one just mentioned; and, being accompanied by febrile symptoms, and generally of short duration, has been distinguished by the appellation of *acute hydrocephalus*, or

HYDROCEPHALUS acutus. This name was first appropriated to the disease in question by Dr. Charles William Quin, of

Dublin, in his inaugural dissertation, published at Edinburgh in the year 1779. He pointed out the febrile, or rather inflammatory nature of the affection of the brain, in the commencement of the complaint, of which the effusion of water appeared to be a consequence, and by which the disease was distinguished from the ordinary dropical effusions. Dr. Cullen, being convinced of the accuracy of this statement when he republished his "*Nosologia Methodica*," in 1780, removed the *acute hydrocephalus*, from the dropics to the apoplexies, with the new appellation of *apoplexia hydrocephalica*, and retained only the *chronic* form as one of the genera of dropics, with the old name of hydrocephalus. Dr. Rush, of Philadelphia, having taken the same view of the disease with Dr. Quin, and deeming it inflammatory in the commencement, called it *phrenicula*, from its being a diminutive species or state of *phrenitis*, or inflammation of the brain. See his *Med. Inquiries and Observations*, vol. ii. p. 215. Philad. 1793.

Physicians have acknowledged the extreme difficulty of detailing a distinct history of the symptoms of hydrocephalus, which shall be exemplified in every case; and they have, especially, differed in describing the appearance which the disease assumes in its commencement, and the length of time which it usually occupies in its progress. The truth is, we believe, that each writer has seen what he has described; for that the malady actually puts on a considerable variety of character, both in respect to its phenomena and duration. The latest writer on the subject, Dr. Cheyne, now of Dublin, has described three different modes in which it has made its attack in different instances which have fallen under his observation (see his *Essays on the Diseases of Children*, Essay III. Edinburgh, 1808.); and a similar division of the varieties of the disease has also been made by professor Kuhn of Leipsic. (See *Edinburgh Med. and Surg. Journal*, vol. iii. p. 13.) These are, 1st, when the symptoms come on slowly and gradually; 2d, when the attack is sudden and the progress more rapid; and 3d, when the disease ensues upon some previous indisposition. The first of these Dr. Kuhn terms the *nervous*, and the second, *inflammatory hydrocephalus*; the third he mentions only as a sequela of scarlet fever. These varieties of the symptoms, however, only mark the attack of the disease; for in the latter stages there is little diversity in the appearances.

In the first, or gradual mode of attack, before any characteristic signs of the disease appear, the child for some days, or even weeks, has complained of pains in his head or belly, while at the same time he has been slightly feverish, dull, ill-complexioned, without appetite, or perhaps with an increased appetite, and with some disorder in the functions of the abdominal viscera. These complaints rise gradually; but are seldom alarming; and the child's friends are not awakened to a sense of his danger, until, advancing a step farther, the disorder begins to shew itself more distinctly. The dulness is accompanied with pains in the head, which is also connected, upon getting up in the morning perhaps, or after he has begun to stir about, with vomiting. Yet even this symptom is often disregarded, until the second or third day of its recurrence, and the disease has made considerable progress, before the illness of the patient is suspected to arise from a disordered condition of the brain. When the attention is more particularly excited by these symptoms, the head-ache, which is chiefly in the forehead, or sometimes in the crown, will be found to return at shorter intervals. The child often affectingly complains of his head. He sighs frequently, is dull, his head requires to be supported; he complains of weariness in his eyes; the pupils are sometimes unusually contracted, and he has an aversion

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to light; his tongue is white, and his belly generally costive: the stools are first clayey; as the disease advances they become of a gelatinous consistence, of a dark green colour, sometimes as dark as tar, and of a sickly smell. The pulse becomes quick; and at particular times of the day these symptoms are attended with febrile heat and irritability, and the child complains not only of head-ache, but of pains in different parts of the body, sometimes extremely acute. At one time he complains of pains in his limbs, at another of pains in his breast, or in the nape of the neck, very often in his bowels; and before the anxiety of his friends can make any preparations to relieve him, the pain is gone, or fled to some other part; at another time he lies on his mother's knee, restless and whining, as from dull rheumatic pain. These disorders necessarily impair the child's strength, and in the course of ten days or a fortnight his appearance is considerably altered; he is peevish and feeble.

In the second form of the attack, Dr. Cheyne observes, the disease runs a more rapid course. After the child has been drooping for a short time, which, although it sometimes escapes observation, is generally recollected, there is a sudden change to a fever, attended even from the first with a great degree of heat and irritation, with frequent but short and irregular remissions, flushing, severe head-ache, tenderness all over the abdomen, and increased sensibility, with sometimes brilliancy of the eyes. It is said to be often difficult immediately to distinguish hydrocephalus from fever, and this is the form of the complaint in which there is the greatest resemblance between the two diseases; but we are led to suspect some deeply seated evil, from the frantic screams, and complaints of the head and belly, alternating with stupor, or rather lowness; and we are struck with the irritability of the stomach, in a degree beyond what we find in fevers of this country, retching and vomiting being often brought on by a change of posture, certainly by every attempt to sit up in bed, and with the disordered state of the bowels which attends this irritability of the stomach; and when at any time the child has a little respite from the violence of these symptoms, we find our suspicions confirmed by his look; for, in this disease, when the features do not express pain or terror, there is not unfrequently an expression, which it has in common with some other diseases of the brain, of dejection, bordering upon insensibility, which is quite insupportable to those who are interested in the patient's recovery.

In the third mode of attack, when hydrocephalus arises after an imperfect state of health, as where there had been a scrofulous action which has abated, or where the child has had some epidemic disease formerly (perhaps many months before), from which he has not perfectly recovered, or regained sound health, the attack is sometimes made with all the violence distinguishing the second form just described. When again the attack comes on as the sequel of an acute disease, as fever, hooping-cough, perhaps dentition, or during some actually existing scrofulous disease, the child almost imperceptibly slips into hydrocephalus; there are scarcely any of the acute symptoms; and the pallies or convulsions are the first indications of the new disorder.

In whatever mode the disorder commences, it is marked in what has been called, by Dr. Whytt, the *first stage* by a febrile condition, varying much in degree and regularity; the sleep becomes imperfect and apparently uneasy, the little patient often grinding his teeth, picking his nose, and starting with a scream, as if he were terrified. There is great fluctuation in the feverishness: at one time the pulse is quick and throbbing; the heat of the body is increased; the skin parched; there is a deep blush on the face, more especially

on one cheek; and the breathing is sighing, laborious, and quick: at another time the blood circulates more equally; the skin is of a natural warmth, or moist with temporary perspiration; the countenance is pale; and the breathing so soft that it cannot be heard. There is also great fluctuation in the state of the other functions. Sometimes the state of the stomach appears to be nearly natural; at other times the heavy smelling breath, that has been supposed by Dr. Whytt to be peculiar to this disease, the total absence of appetite, and constant vomiting, even for days, shew the stomach to be in the greatest disorder. The bowels are never regular; they are generally slow, requiring cathartic medicines, and now and then a constant and severe bilious purging attends the vomiting. The urine is sometimes withheld for 24 or 36 hours; occasionally a frequent desire to pass it has been observed. And not only are the vital and natural functions irregular; we find the same extremes in the animal functions; to this, indeed, the diseases of the brain owe much of their interesting character. The senses and judgment are often perfect and entire, sometimes morbidly acute; in general the retina is painfully sensible to light, and the child is sometimes unpleasantly affected by slight sounds: on the contrary, sometimes, even in the early days of the disease, the mind is subdued, and there is the greatest dulness of apprehension.

It generally happens, but by no means with the certainty which the description of Dr. Whytt would lead the student to expect, that after the first or febrile symptoms have continued an indefinite time, from a few days to a fortnight or more, a remarkable change takes place in the disease, especially in the condition of the pulse, by which the commencement of the *second stage*, according to Dr. Whytt and others, is marked. The pulsations become slow, even slower than in health, and at the same time unequal and irregular, both as to strength and the intervals between the strokes; but, as Dr. Cheyne remarks, they are easily doubled by the least exertion. With the slowness of the pulse, a greater degree of dulness and torpor comes on; the pain of the head seems to abate, or at least the patient becomes apparently less sensible of it; and as this stage advances, he grows drowsy and lethargic, yet moans heavily, without being able to tell what distresses him; and often starts and cries in a wild manner, as if from momentary attacks of acute pain. The pupils are observed to be dilated, and a want of consent between the two eyes, attended with imperfect, and not unfrequently double vision, takes place. As the disease proceeds, the squinting and dilatation of the pupil increase; the patient lies with one or both eyes half closed, which, when minutely examined, are often found to be completely insensible to light; and they now lose their vivacity in consequence of a filmy covering of the cornea. The sickness ceases, and whatever food or medicine is offered, is usually swallowed with apparent voracity; the bowels generally remaining obstinately costive.

These symptoms are soon succeeded by others, which mark the *third stage*, and announce the approach of death within five or six days, or sometimes within a much shorter period. The pulse now becomes equal and regular, and rises to a rapidity greater than ever; which continues to increase while life remains. There is no disease, we believe, in which the pulsations become so frequent, and yet continue distinctly numerable, as in the closing scene of hydrocephalus. Dr. Whytt says, that no patient dies of this disease, while his pulse remains under 130 beats in the minute; in one case he counted it 210 in the minute on the day of death. We have distinctly enumerated 190 beats under the same circumstances.

A. comatose.

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A comatose state now comes on. The patient lies with a frequent hectic flush on his cheek, alternating with a deadly paleness; drawing a long sigh at intervals; often grinding his teeth; incoherent, or in a state of complete insensibility; perhaps picking about or fawing the air with one hand, while the opposite side is palsied; with a burning fever on his skin, or sweat forced from every pore; and all these symptoms alternating with, and at last finished by, apoplectic breathing, and convulsions.

The whole concourse of the symptoms, as well as the changes in the state of the pulse, which occur in each of the three stages, constitutes a very remarkable peculiarity in this disease, and gives a character to each stage. The *first* has been called the stage of increased sensibility, or inflammatory irritation: the *second*, that of decreased sensibility, or torpor: and the *third*, the paralytic or convulsed stage. In the *first*, every stimulus produces an inordinate effect: there is great aversion to light and to sounds; watching, sickness, pain, and quickened pulse. In the *second* stage, the child is not easily roused, his pupil is dilated, and does not contract on the approach of light, his pulse is slow, he is lethargic, with often an obstinately costive belly. In the *third* stage, which may, perhaps, be considered as a continuation of the second, there is squinting, rolling of the head, delirium, stupor, convulsions, with a rapid thready pulse.

Physicians have represented the duration of the disease differently: Dr. Whytt supposed it to extend to four, five, or six weeks, from the date of the first symptom; while Dr. Fothergill commonly found it to terminate in three weeks. On the whole, experience seems to have corroborated the observation of Dr. Fothergill. But, like every other disease, of the brain, hydrocephalus is uncertain in its duration, especially when the pulse has become slow, or the stage of torpor has arrived. Sometimes, in the course of two or three days from this change, the child shall be carried off; while, in other cases, even the last stage continues day after day, for upwards of a week, when, at every visit, the observer would conceive that the patient had only a few hours to live. In cases of the second, or acute mode of attack, and also in the third, the whole disease sometimes runs its course in a few days; while, in the first mode, from the great length of the first stage, it has been observed to last many weeks. Dr. Quin states, apparently on conjecture, that the disease may be expected to be more rapid in its course, in adult persons, than in young children. But our observation accords with that of Dr. Cheyne and others, in stating the contrary. In a boy of twelve years old, we once saw the disease run on, in a very gradual course, to the length of eight weeks, and then terminate fatally.

Nor is there less variety in the symptoms and progress of the disease, than in its duration; inasmuch that Dr. Quin has called it a "truly Proteiform distemper," and Dr. Rush accords in the justness of the appellation. Cases have terminated fatally, in which some one or more of the characteristic symptoms have not appeared, and sometimes when "no one symptom afforded any suspicion of the real cause of death," which was ascertained by dissection. (See Dr. Quin's Essay, p. 43.) The same author mentions another case, which terminated fatally in seven days, and dissection determined the nature of it; "yet the usual variations of the pulse in the several stages did not take place; the pupils were not dilated until the last day of the child's life; he never once vomited, never expressed a dislike to light, and the head-ache, though constant, was not violent." Dr. Rush observes, "I have not found the dilated and insensible pupil, the puking, the delirium, or the strabismus, to attend

universally in this disease. I saw one case in which the appetite was unimpaired from the first to the last stage of the disorder." (Med. Inq. and Obs. vol. ii. p. 209.) On the contrary, we lately saw a case, in which the chief symptom of indisposition, for the first four or five days, was a constant sickness in the stomach, which rejected almost every thing as soon as swallowed while the head remained apparently free from uneasiness. Other cases are mentioned by Dr. Rush, in which no head-ache occurred during the course of the disorder; in which no preternatural slowness or intermission was ever perceived in the pulse; and in which no dilatation of the pupil, squinting, sickness, or loss of appetite had attended: and others, in which an uncommon acuteness of hearing, palsy of one side, and the symptom of hydrophobia, had respectively occurred. Dr. Whytt also mentions an irregularity in the state of the pupil. "Three or four days before the death of a boy of five years old," he says, "I was surprised to find the pupils, which had been much dilated before, no larger than natural. At first I flattered myself that the disease had taken some favourable turn; but was soon undeceived: for, upon giving the child a spoonful of weak cinnamon water, with some drops of *Spiritus volatilis clesfus*, the pupils became as wide as they had been the day before. In less than half an hour after they contracted again; but immediately dilated upon holding some spirit of *sal ammoniacus* to his nose. I have since observed the same interchanges in the pupils of a boy of four years old, on the third day before he died. In this case the pupils not only were enlarged, by giving him a spoonful of wine, or holding volatile spirits to his nose, but also by so small a stimulus as my lifting up his eyelids, which had lost all their motion, and had fallen so far down as to cover near the half of the eye." Observations on Dropsy in the Brain, Whytt's Works, p. 733.

Dissection.—The circumstance which was first noticed, on examining the head by dissection, in patients who had died of this disease, was the constant occurrence of a limpid watery fluid, distending the ventricles of the brain, and amounting in different instances to the quantity of from two to six ounces. In some cases, only one of the lateral ventricles has been found thus distended. A small quantity of fluid is also commonly found between the membranes surrounding the brain, especially under the *tunica arachnoidea*, both above and at the base of the brain. The water, collected from the ventricles in hydrocephalus, does not coagulate by heat; in which respect it differs from the *serum* of the blood, from the water that is found in the *pericardium*, and from that which is taken from the abdomen, by tapping, in dropsy.

But in addition to this effusion of water, later authors have observed, in many instances, the marks of congestion in the blood-vessels of the brain, and of different degrees of inflammatory action. Dr. Cheyne remarks, "upon dissection, we generally find within the cranium, the veins, particularly those of the membranes on the surface of the brain, and lining of the ventricles, gorged with blood; sometimes considerable adhesion between and thickening of the membranes, and minute and florid vessels upon the *pia mater*." (Loc. cit. p. 31.) And Dr. Quin has related several cases, "wherein the quantity of fluid found in the ventricles was very considerable; but at the same time, there were signs so visible of an increased flow of blood to the brain, that in all of them the vessels were remarkably turgid; in most of them a degree of inflammation had taken place, as appeared at the time of dissection, either by preternatural adhesions of the membranes, or by a partial opacity and increased thickness of them, together with patches of inflammatory crust, very similar to those which are found on the abdo-

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minimal viscera of persons whose death has been the consequence of *enteritis*; or on the lungs and *pleura* of those who have sunk under pulmonic inflammation." P. 51.

In investigating the seats of diseases by dissection, physicians are too apt to confine their examinations to that part of the body, in which the most prominent symptoms of derangement had occurred during life; by which practice a very imperfect knowledge of the morbid changes is often acquired. This error is too frequently committed in respect to hydrocephalus, when the contents of the *cranium* alone are examined: for it appears that the viscera of the abdomen often suffer in this disease. "In the abdomen," says Dr. Cheyne, "I have found the intestines inflamed, and constricted from spasm, and the surface of the liver of a bright red colour, abounding in minute vessels; and sometimes extensively adhering to the peritoneum. In several dissections, I have found the surface of the liver studded with small white tubercles, not larger than a grain of mustard. The glands of the mesentery are often diseased, &c." (P. 31.) And, in another place, the same writer remarks, "upon dissection of hydrocephalic children, I have found in the liver the remains of great inflammatory action, and also proofs that undue irritation had existed in the alimentary canal." P. 46.

Causes of Hydrocephalus.—This subject remains in some degree of obscurity, more especially in what regards the exciting causes. A *predisposition* to the disease is pretty obviously found in that peculiarity of constitution which is allied to scrofula, and which is characterized by a frame of body that is rather delicate and irritable, and often beautiful—and by acuteness of intellect and liveliness of disposition—the skin being fair and well coloured, the eyes blue, and the hair light. This predisposition is often *hereditary*, and attached to particular families. Dr. Cheyne attended two families, in one of which four children, in the other three, died of this disease; and he had "heard of an unfortunate family who lost seven children of hydrocephalus." We are acquainted with one, in which seven children perished from this malady, when they arrived at a certain age, apparently of strumous constitutions. Sauvages has a similar observation. "*Novi familiarum,*" he says "cujus infantes circa sextum ætatis annum omnes periere ex hoc morbo, scrofula huic effusioni ansam præbente." (See his Nosol. Method. class. iv. gen. xii. 5. Convulsio ab Hydrocephalo:—also, gen. xviii. 14. Ecclampsia ab Hydrocephalo.) Dr. Percival states, that of twenty-two cases of which he kept notes, eleven were certainly strumous children, and four were probably so. (Med. Facts and Obs. vol. i. p. 129.) Hydrocephalus is more particularly a disease of *childhood*, occurring most frequently in the middle years, between weaning and puberty. Occasionally, however, it is seen at every period of life, with the exception, perhaps, of old age. A state of *imperfect convalescence* from scarlet fever, measles, small-pox, whooping cough, and other acute diseases, appears to generate a predisposition to hydrocephalus. Many cases of hydrocephalus occur, of which no *exciting cause* can be traced, sometimes, indeed, little accidents, as falls and blows, are recollected, when the disease has made its appearance, which had occurred several weeks or months before, and had excited little attention at the time. Whether these accidents were actually the causes of the disease, which thus ensued, after a long interval of health, is certainly a matter of doubt. Dr. Cheyne observes, that, in upwards of a hundred cases which he had attended; he had only met with one, in which external violence could be considered as the origin of the disease, and that in an indirect manner. This child had, at the same time, a severe and obstinate catarrh; which he deemed more likely to impair the general

health, and thus to predispose to hydrocephalus. He adds, that he has repeatedly seen symptoms of scrofula following a severe accident, which may thus intermediately induce hydrocephalus, by deranging the general health, and calling into action what, from a good and fortunate management, had hitherto been latent.

It would seem, however, that any circumstance which can produce a state of general debility, but especially any cause exciting an active feverish state, of the inflammatory kind, in children predisposed to the disease, will call it into action. Hence the irritation of teething, and of worms in the alimentary canal, especially if attended with convulsions; sudden exposure to cold; fevers; rheumatism; pulmonary consumption; colic, and other diseases, have been mentioned among the causes of hydrocephalus. (See Rush, Med. Inquiries, vol. ii. p. 211, et seq. and the references there given.) Some other causes have been alleged; such as a suppression, or spontaneous metastasis, of eruptions, especially of the scald head; the healing of old ulcers; the cessation of customary discharges; a serous colluvies of the blood; ruptured lymphatics, &c.; but these are apparently hypothetical suppositions, and their operation is not very obvious.

The *proximate cause*, as in many other diseases, has been the subject of considerable difference of opinion. Dr. Whytt, Dr. Fothergill, and other authors, viewed the malady in the light of a mere dropical effusion into the cavities of the brain, partaking of the nature of ordinary dropsy in other parts of the body, and originating from the same causes. Dr. Quin, however, pointed out the error of this opinion, and the proper distinction between the chronic and the acute hydrocephalus, of which we now treat. There are many reasons for adopting the opinion of Dr. Quin, and attributing the peculiar symptoms of the disease, not so much to an effusion of water in the ventricles, as to a morbid circulation or accumulation of blood in the vessels of the brain, which sometimes proceeds to a degree of inflammation, which is generally followed by such an effusion. Dr. Cheyne adopts a notion very similar to this. "I would venture to submit the following," he says, "as a more consistent view of the pathology of hydrocephalus. That in this disease there is produced a venous congestion, in addition to, and probably arising from, the increased arterial action: that the effusion of serous fluid arises from this venous congestion: that this effusion has a tendency to counteract the baleful effects of the increased action, and to retard the fatal termination of the disease: of course, that the effusion into the ventricles is not the cause of the violent symptoms; and that the increased arterial action, though perhaps varied, does not cease when the congestion and effusion have taken place." P. 59.

There are many facts and observations which tend to corroborate this opinion. Dr. Quin mentions two cases, in which the symptoms preceding death were, to all appearance, so unequivocal, that the physicians not only pronounced the disease to be water in the head, but likewise foretold the symptoms that were to be expected a few days before dissolution: the looked for changes did accordingly take place, and the patients died. "In both cases, to the astonishment of those who were present, and prepared to find on dissection a great redundancy of water within the cranium, *none could be discovered* in any part of the brain; but the *blood-vessels were so unusually distended*, that the whole of the cerebrum and cerebellum resembled an anatomical preparation, in which the utmost force of injection had been employed." (P. 50.) Dr. Cheyne mentions two cases of a similar nature; in one of which the progress of the disease, although rapid, was regular, the three stages of Dr. Whytt being well marked. Scarcely a spoonful of water was found in the

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the ventricles; "but the brain was so turgid, that when the bones were sawed fairly round, the section was thrust up half an inch by the sudden and forcible protrusion of the cerebrum: not only the veins of the pia mater were loaded with blood in a very remarkable degree; the medullary substance of the brain was finely dotted with numerous red points, and the cortical substance streaked with pencils of red parallel lines." In the other instance, "no effusion was discovered in the ventricles" after death. It was an extreme case of the acute hydrocephalus, where the excitability was suddenly exhausted by the violence of the attack. "When, as in this case, Dr. Cheyne adds, "the child dies early in the disease, with every symptom of accelerated arterial action, but before the subsequent congestion has existed for any length of time, the dissection will never afford much effusion. When, on the contrary, the patient long survives the flow pulle; and when, from the continuance of the disease, we have reason to think that the congestion has existed for a considerable time; then we find a large effusion. In such cases I have discovered, within the head, little appearance of arterial action, as marked by the tissue of minute and florid vessels: this stage of the disease was over; yet the effects of inflammation abundantly appeared in the thickened and greater adhesion of the membranes; in the great congestion; and indeed, from the pain, suffusion of the eye, &c. we cannot doubt that it exists to the last." (Cheyne, p. 63.) Dr. Quin details several cases, in which, together with considerable effusion of water, the vessels were found extremely turgid, and the previous existence of a degree of inflammation was demonstrated "by preternatural adhesions of the meninges, or by a partial opacity and increased thickness of them, with patches of inflammatory crust," &c.

On the other hand, numerous cases are on record, in which quantities of effused fluid have been found; on dissection, in the ventricles, when no complaint of pain in the head, or symptom denoting an oppressed brain, had existed before death. Maniacal patients, in whose ventricles many ounces of fluid have been found, have died without evincing any hydrocephalic symptoms. And, in fact, there is scarcely any organic disease of the brain which is not accompanied by effusion.

These facts being admitted, we think it were unnecessary to argue the point taken up by Dr. Cheyne, against Dr. Quin and Dr. Rush, viz. whether "the morbid arterial action" in the brain amounts to such a degree of inflammation as entitles it to be compared with *phrenitis*, or to be called *phrenicula*; or whether we must be content to say, with Dr. Cheyne, that it appears "to consist of a diseased action of a peculiar kind." P. 82.

This view of the disease, however, although doubtless correct as far as it goes, does not embrace the whole phenomena. It has often been observed that a train of symptoms, similar to those of hydrocephalus, has arisen from the sympathy which subsists between the brain and other organs, especially the alimentary canal, the liver, and the urinary organs. (For instances of sympathy with the last mentioned organs, see Sauvages, class vi. gen. xxix. 4. *Carus ischuriosus*, and the references there given: also Med. Facts and Obs. vol. i. art. 1.) It is chiefly, however, as Dr. Cheyne observes, from a morbid state of the liver and alimentary canal, that we find the hydrocephalic symptoms by association to arise. Every practitioner of observation has probably been occasionally surprised by the recovery of children under many of the symptoms of hydrocephalus, while purgative medicines, especially of the mercurial class, were administered. Dr. Willan states, that the hydrocephalus of Dr. Quin, marked by the presence of inflammatory irritation in the head, as

above described, "should be distinguished from the symptomatic hydrocephalus, which often takes place, with very similar symptoms, after the crisis of malignant fevers; during the *bedica infantilis*; and in some other acute diseases of children, particularly the febrile state produced by dentition, worms, and disorders of the bowels and mesentery. Cases of this kind are usually removed, within a week or two, by the use of calomel or other active purgatives, and blisters." Reports on the Diseases in London, p. 270.

Now we think this statement much too general. It is certain that these irritations and morbid conditions of the bowels are common concomitants of the ordinary and fatal form of hydrocephalus. In his description of the second stage of the disease, Dr. Whytt mentions the discharge of worms, or of some substance like worms in a dissolved state, as a "frequent" occurrence (Works, p. 732.); and we have more than once seen a *lumbricus* voided under the same circumstances. The condition of the stools, when hydrocephalus is established, is so peculiarly morbid, that several practitioners speak of "hydrocephalic stools," as sufficiently intelligible to those who have made any observation on the subject. The evacuations appear to consist solely of a dark glazy bile, mixed with the mucus of the intestines. There are many other considerations, too, which tend to prove the connection of the proper hydrocephalus with this morbid condition of the abdominal viscera, and to support the opinion of Dr. Cheyne, Dr. James Curry, and others, that this disease "is often fairly and incurably established by the sympathy which the brain has with these organs." Cheyne, loc. cit. p. 38.

In the first place it would appear that hydrocephalic symptoms, arising from sympathy with disordered digestive organs, have sometimes proved fatal, without producing any obvious change of structure in the brain. Mr. Abernethy examined the body of a child, who had unequivocal symptoms of hydrocephalus, in which the brain was found perfectly healthy, the only diseased appearance being in the bowels. (See his Surgical Observations, part ii. p. 193.) Again, Dr. Hamilton has observed, that "hydrocephalus often steals slowly on the devoted victim, with symptoms resembling those of marasmus;" whence he thinks it not unreasonable to suppose that the marasmus, which is clearly the result of a morbid state of the liver and bowels, may occasionally give rise to hydrocephalus. (See his Observations on Purgative Medicines.) Dr. Cheyne advances similar observations. "In many cases," he says, "previously to the hydrocephalic symptoms, the chylopoetic viscera have been disordered for many weeks. The appetite has been bad; the bowels costive, the stools betraying disorder in the hepatic system; there has been all that want of alacrity, both of body and mind, so invariably the consequence of the derangement of the biliary secretion; and in several children, previous to the existence of any morbid sensation, the first symptom of ill health was the loss of the healthy colour of the skin. In children predisposed to the disease, I have, while removing, by a course of purgative medicines, a vitiated biliary secretion and disordered state of the bowels, removed also the very symptoms which had presented themselves in other children of the same family, when the attacks of a hydrocephalus, which actually proved fatal, were supposed to have been established. In children, where I did not know of any family predisposition, I have, by the same means, in many instances, removed the symptoms which are always found in the beginning of hydrocephalus." — "The increased arterial action on the surface of the liver, the remains of which I have observed in my dissections, to every appearance had been of some standing, and in two or three instances,

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from the extent of the adhesions, it evidently had been of great intensity. While the disease is forming, there is generally a defect in the function of the liver: it seems to admit of only a scanty and imperfect formation of the bile, insufficient to stimulate the intestinal canal, which becomes torpid, and is sometimes loaded with fœtid clay-coloured excrement.' Pp. 45.—47.

We omit many other circumstances, occurring in other diseases, which might illustrate the influence of a morbid condition of the chylopoetic viscera in producing coma, lethargy, apoplectic symptoms, affections of vision, &c., as well as several striking cases mentioned by Dr. Cheyne. It appears, from what has been stated, in the highest degree probable, that hydrocephalus, when it makes its attack especially in the first mode above related, frequently originates from the sympathy of the brain with such a morbid condition in the viscera of the abdomen: and that the instances which Dr. Willan would separate, as distinct from the most acute form, differ principally in the degree of mildness, or in being treated properly before the disease was too firmly established. It may not be easy, indeed, to frame rules, to use the words of Dr. Cheyne, "by which we may decide, when the symptoms arise from the morbid sympathy between the brain and a deranged state of the liver or the intestines, or when they originate from the disordered state of the brain, unconnected with any distant organ. This investigation is important, but not easily prosecuted: perhaps future observation may prove that we shall not be wrong to trace the disease to the organ *which first has its functions sensibly impaired*; in a great many cases it has appeared to me that a series of diseased actions has commenced with the disordered state of the abdominal viscera." Loc. cit. p. 50.

An explanation of the symptoms, then, may be thus given. The first stage of the disease is principally referable to increased arterial action in the brain, not yet, however, so great as to have produced any material change in its condition, which could be detected by dissection, until near the approach of the second stage. The patient is then feverish, averse to light, sick, disturbed in his sleep, fretful, and complaining of head-ache. When the pulse is becoming irregularly slow, the inflammatory congestion is considerably increased, and the effusion of water into the ventricles is probably beginning: and as the pressure augments, the effects of it upon the root of the optic nerves, (or the *thalami nervorum opticorum*.) become obvious in the squinting and dilatation of the pupil, which last arises from the beginning insensibility of the retina, and the squint from the irregular influence of the nerves connected with the muscles of the eye-balls. At the same time the lethargic disposition, the cruel pains darting through the head, exciting screams and starting from sleep, the slowness and irregularity of the pulsations of the heart and arteries, all denote the impeded functions of the brain from the increasing congestion and pressure within it. Then succeed complete blindness, often accompanied by convulsions or paralytic symptoms, as the disease approaches to its termination; after which we discover all the remains of great arterial action, adhesions of the membranes, great congestion, effusion, and even obvious change of structure; more particularly when the last-mentioned symptoms have been severe and of some duration. It is not very easy, as Dr. Whytt admits, to explain the origin of the extraordinary rapidity of pulse which ensues towards the close of the disease, since the third stage appears to be but a continuation and increase of the second. Whether the sickness, in the beginning, arises from the sympathy of the stomach with the disordered state of the brain, or from the state of the bilious secretion and of the bowels, is not clear, and probably it originates from one

or the other in different circumstances; but the vomiting in the more advanced stages of the disorder is more naturally explained (according to Dr. Whytt) by the sympathy of the stomach with the oppressed brain. The great torpor of the bowels, which arises in the first instance, probably from the scanty and imperfect formation of the bile, may be afterwards augmented by the disordered condition of the brain and nerves.

The Diagnosis.—Having stated the phenomena of hydrocephalus at considerable length, it will be unnecessary to dwell minutely upon the peculiar diagnostic symptoms. It is of the utmost importance, however, that the nature of the disease should be detected as early as possible; and it is not too much to say, with Dr. Cheyne, that the physician should be ever on the watch for it, in attending to the disorders of children, and should never hear a little patient complain of head-ache, without investigating the history of his health preceding this complaint, and comparing it with every ambiguous symptom. Loc. cit. p. 89. See also Dr. Quin's Treatise, p. 44.

The principal difficulty is to distinguish incipient hydrocephalus from the fevers, occasioned by the irritation of dentition, or of worms in the intestines; or "the infantile remittent fever" of Dr. Buter. These fevers have several symptoms in common with hydrocephalus: but the commencement of hydrocephalus is generally more gradual; the disorder of the stomach is more constant, especially the frequent recurrence of vomiting; there is an aversion to light; the stools are dark, of a dirty green colour, and glairy; the pain of the head, when fixed, is oftener dull than acute, but so overpowering that it does not admit of the head being raised from the pillow; sometimes it is a very acute pain; at intervals, and these sometimes regular, it darts through the centre of the brain, and the child is roused with an expression of helpless anguish from the dozing which precedes this acute pain, and into which he instantly relapses when it is gone: the intermissions of the disease are very irregular. In children of some growth, a peculiar expression occurs in hydrocephalus; the countenance has a sort of stare of vacancy, with much appearance of anxiety, and great caution evinced in moving the head. In the remittent fever the affection of the head is commonly much less obvious; the remissions are generally regular and complete, there being one in the morning or early in the forenoon, followed by an exacerbation in the afternoon, which continues through the night; the stools are usually dark-brown, or mud-like; a glairy dark-green discharge, however, has been sometimes observed in this fever. All organic diseases of the brain have a general resemblance to hydrocephalus, and to each other, such as scrofulous tumours, abscesses, caries of the bones, &c.; but the disorder, in these cases, is much more tedious than hydrocephalus. Cheyne.

The Prognosis in hydrocephalus is always doubtful, and, on the whole, unfavourable, even in the first stage of the disease; in the second stage it is extremely unfavourable; and in the third it is almost uniformly hopeless. Dr. Whytt considered it, indeed, as hopeless under all circumstances, and acknowledged that he never saw a patient recover. But subsequent experience has taught us, that it ought not to be held an incurable disease: several instances of recovery are on record. Dr. Percival of Manchester, and Dr. Dobson of Bath, both effected a cure in their own family, by timely attention to the disease; several examples are related in the periodical publications, (Lond. Med. Journ. vol. iv. p. 82. vi. 113. i. 424.—See also Med. Obs. and Inq. vol. iv. and vi. Edin. Med. Com. vol. vi. p. 220 and 224. viii. 325 and 332. ix. p. 240. x. 299, &c. and other journals,) and in the ap-

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pendix to Dr. Cheyne's treatise. Dr. Willan mentions three cases out of eight which terminated favourably, "two recovered about the eighteenth day of the disorder, the third, an infant, at the end of the fifth week, after having been long abandoned to its fate." (Reports on the Dis. in London, p. 269.) The chance of cure in general, however, is nearly in the inverse proportion to the duration of the symptoms.

It has been observed by Dr. Cheyne, that a great increase of urine has often occurred when the disease has terminated in recovery; and that when the urine flows freely after giving mercury, it may be deemed a favourable prognostic. Occasionally a copious diaphoresis, especially from the head, has also preceded recovery. In one case, after a child had been condemned as in a hopeless state, and the physicians had discontinued their visits, "a profuse sweat broke out on the head and neck, and flowed so copiously that the pillows had to be shifted one after another. From that moment the child is said sensibly to have recovered, and yet lives. Seven years have elapsed since his recovery." P. 87, note. See also a case in the Edin. Med. Comment. vol. x. p. 299, and Dr. Quin's Treatise, p. 73.

Of the Cure.—In a disease which, from its very commencement, is of a most dangerous tendency, and when completely established is commonly fatal, it is obvious that, in order to have any tolerable chance of success, the treatment should be entered upon early, in a decisive manner, and pursued with steadiness and vigour. The principal indications of cure appear to be, 1st, to diminish the inflammatory activity of the circulation in the brain; and, 2dly, to remove all irritations, especially in the alimentary canal, and to correct the hepatic secretion or congestion, which, by morbid sympathy, may have given rise to, or may have assisted in prolonging the diseased action in the brain.

In the very early periods of the disease, indeed, our first attention should be directed to the state of the alimentary canal, and an active cathartic should be given, and repeated according to circumstances. Should we ascertain that the canal is torpid, and imperfectly performing its functions, admitting an accumulation of feculent matter; or that the secretions flowing into it are vitiated or diminished in quantity, (which we discover by the peculiarity in the appearance, or the pungent factor of the stools,) we must endeavour, by steadily pursuing the purgative plan, to effect a change: for while this is produced in the appearance of the stools, by the stimulating quality of the medicines, a most important change is effected in the hepatic system, intestinal canal, and all the parts including every organ essential to life, which is by sympathy connected with them. The purgative plan may be pursued without inducing debility; on the contrary, with evident accession of strength, so long as there is foulness of the bowels, either while the stools are foetid and clay-coloured, or while they are dark and slimy. In the advanced stages, however, when the oily-looking, or glazed dark-green stools, almost peculiar to this disease, are evacuated, we cannot hope to effect a cure by purgatives. But in the earlier periods, should little disorder in the alimentary canal and biliary secretion be observed, if the strength of the patient be unimpaired, and his constitution originally sound, the exhibition of purgative medicines, perhaps every second or third day, may be advantageous.

For these purposes preparations of mercury, and especially calomel, appear to be the most suitable, as the first doses of them seldom fail to stimulate the bowels. When this does not happen, and the purgative effect is not produced, some other medicine, as jalap, aloes, scammony, must be given in addition. Dr. Cheyne says, "purgatives have generally been given in this disease; but, when called early, what

I recommend is, the exhibition of the largest dose, which can with safety be prescribed, of some powerfully cathartic medicine, two, three, or four times a day, and this continued for several days, or until natural stools are procured. The advantage of keeping the intestinal canal under the continued influence of a stimulus, I have, in various instances, found to be so great, that I am induced to repeat the declaration of my belief; that the happiest result may be expected from this measure." P. 95.

It may be added, that should the symptoms indicative of commencing hydrocephalus, prove to be in fact the symptoms of remitting fever, or to arise from worms in the intestines, this practice fortunately proves the most efficacious means of removing these diseases. On the whole, therefore, the free administration of cathartics may be recommended, under all circumstances, in the commencement of the disease.

In regard to the means of fulfilling the indication of reducing inflammatory action within the head, especially by blood-letting, there has been some difference of opinion. Dr. Rush recommends general bleeding indiscriminately, in the first stage of the phrenicula (as he denominates the disease), even to an extent greater than is requisite in the more acute phrenitis, except in very young children. It has not appeared, however, that this practice is entitled to more credit, even in his hands, than other modes of treatment. Where the constitution is robust, and the attack is of the most acute form, general blood-letting may, doubtless, be resorted to with great benefit, and is especially serviceable, as Dr. Rush intimates, in preparing the way for the operation of mercury. In less active forms of the disease, however, and in delicate habits, and more particularly when it arises after the constitution has been exhausted by preceding disorders, local evacuations of blood by means of leeches, or cupping, should be preferred; and the operation may be repeated, according to the urgency of the symptoms, the state of the pulse, and the general strength of the patient. We agree with Dr. Cheyne in looking upon the inflammatory action in the brain as going on during the whole progress of the disease, and not ceasing with the first stage of increased sensibility, or before the stage of torpor has begun; and, therefore, in considering local bleeding, as a proper expedient, when otherwise indicated, even to a late period of the disease. At the same time, the prospect of deriving benefit from the practice is trifling, when much organic change has already occurred. Dr. Whytt mentions, as the only benefit he had ever observed from medicine, a temporary relief, in the second stage of the disease, from the use of local evacuations; and probably almost every practitioner has witnessed the same effect of them, even in this stage.

Blisters applied over the whole scalp, or to the forehead, occiput, and sides of the head, in succession, may be considered as important *juvantia* in relieving the internal inflammatory action of the brain; especially some evacuation of blood has been procured. They often afford obvious relief to the pain, and therefore should not be omitted at any stage of the disorder. Several instances of recovery from hydrocephalus are on record, in which the agency of blisters appears to have constituted a very important part in the cure. (See Dr. Quin, loc. cit.) This intelligent physician generally applied a large blister over the whole head, and dressed it with an ointment of cantharides: Dr. Cheyne uses the strong mercurial ointment for that purpose.

With a view to lessen the activity of the circulation, the use of *digitalis* has likewise been resorted to, as well as for the purpose of increasing the urinary discharge, and exciting absorption of the effused fluids. Its qualities of diminishing the irritability, retarding the pulse, and quickening the action of the

the absorbents, seem to render it a medicine of great promise in fulfilling the indication now under consideration, without endangering the constitution of a delicate child, in the same degree as blood-letting. In a few cases it has been employed with apparent advantage. It is a medicine, however, of extreme uncertainty in its operation, and has not answered the expectations at first entertained of it in the cure of some other diseases; it can only be used, with any probability of success, when administered with activity, and it can only be given with safety in adequate doses, when its operation is cautiously and unremittingly watched. Dr. Cheyne, who has well described the peculiarities of its operation, adds, "The method which I have for some time followed in using digitalis is the most obvious: it accords with the view which I have given of its powers, and does not appear ill adapted to the attainment of a safe and quick effect. I begin with a moderate dose, eight or ten drops of the saturated tincture; and to every succeeding dose, which is generally given at an interval of six hours, I add two or three drops; so that, in a day or two, generally some part of the system is affected. I proceed with great caution, ascertaining, while augmenting it, the effect of the medicine after each increased dose." P. 103.

In aid of the means of diminishing inflammatory action in the brain, already mentioned, the *application of cold*, or, more correctly speaking, the abstraction of heat from the head, particularly in the more acute forms of hydrocephalus, may be resorted to with advantage. Frequent washing of the face and neck with cold water, the application of linen cloths to the forehead wetted with cold vinegar or water, or with æther (which produces cold by its rapid evaporation), contribute much to relieve the pain in the head. In a case mentioned by Dr. Rush, a solution of ice in vinegar appeared to afford the most obvious relief of this distressing symptom. Med. Inq. vol. ii. p. 227.

Of those individuals who have been known to recover from hydrocephalus, the greater number have taken mercury in one form or other; several of them to a very great extent, sometimes with the effect of inducing salivation, often without that result. Drs. Dobson and Percival first recommended and successfully employed that practice, (see Edinburgh Med. Comment. vol. vi. pp. 220 and 224.) and it has been since employed by other practitioners, with a happy effect, in a number of instances. (See many of the references to cures above given.) It has, indeed, frequently disappointed the hopes of the practitioner, even after salivation was induced; although, from the general difficulty of producing this discharge in patients labouring under hydrocephalus, it was at one time thought that the failure of mercury to accomplish a cure, arose from its failure to excite salivation. The superior success of the practice has been such, however, on the whole, that it will be admitted, with Dr. Cheyne, that "when the existence of the disease becomes probable, there ought to be no other delay than that occasioned by our endeavours to subdue the disorder in the bowels, in commencing a *mercurial course*, which, it must be allowed, has cured hydrocephalus, even when far advanced." That intelligent physician adds, that "it should give us more confidence in this remedy, that I have several times observed, when the mercurial stimulus was fully established, that the symptoms were interrupted, and the termination of the disease, although fatal, unlike what we find in cases where mercury has not been used. The convulsions were suspended; the senses, both external and internal, restored; the disease appeared to be checked; but the debility was such, that the vital functions languished; and the constitution had sustained so great a shock, that every effort

to invigorate them was unavailing." Cheyne, loc. cit. p. 99.

The plan pursued by Dr. Percival, and subsequently followed by others, consisted in giving repeated doses of calomel internally, (such as the quantity of two grains at intervals of a few hours,) and at the same time using the strong mercurial ointment by friction upon the skin. It was suggested, that the salutary influence of the mercury was chiefly the operation of the calomel upon the alimentary canal and hepatic system; but Dr. Percival and other practitioners conceived that the effects of the remedy were decidedly more obvious and salutary, when it was thus administered in a two-fold manner. We have been occasionally surprized, indeed, by the prodigious quantity of calomel which has been taken by children, in this disease, within a short space of time, without producing any obvious effect whatever, either on the bowels, the salivary glands, or the system at large. It is not easy to induce salivation in children under ordinary circumstances; but in this disease there is a peculiar degree of torpor in the advanced stages, which renders the constitution much less susceptible of the influence of medicine in the common doses.

Much has been written respecting the best method of restoring the strength of the patient after the decline of the disease. But in this, as in other instances of acute disease, when the great cause of irritation is removed, if there be any strength left, the system never fails to act with vigour, and requires little assistance from art. With the exception of a moderately nourishing diet, scarcely any thing is required to further the progress of convalescence.

In regard to the *prevention* of hydrocephalus, perhaps the most important precept relates to a constant attention to the state of the bowels. "The mother must be taught," to adopt again the words of Dr. Cheyne, "to attend to and to understand every irregularity in the state of her child's bowels. It is not merely costiveness which is to indicate the propriety of a purgative course: costiveness is not to be neglected; but constitutional costiveness may perhaps exist without danger. Attention must be paid to every deviation (not absolutely temporary) from a natural appearance of the intestinal evacuation;" p. 108. (See DEJECTION.) The propriety of instituting a drain, by means of an issue or seton, in the neck, in the surviving children of families where the disease has already occurred, and in whom the marks of predisposition are visible, has been suggested and carried into execution, in some cases, with apparent success. In the family to which we formerly alluded, the last surviving child was supposed to be preserved from the disease by the use of a seton in the neck: it may be remarked, however, that he has now, after attaining the adult age, become the subject of insanity.

All the general means of supporting the general health in children predisposed by constitution to hydrocephalus, such as regular moderate exercise, the occasional use of the cold bath, regularity in diet, &c. must be combined with the attention to the state of the intestinal canal.

HYDROCERATOPHYLLON, in *Botany*. See CERATOPHYLLUM.

HYDROCHARIDES, a natural order of plants named from HYDROCHARIS, which is one of the genera; see the next article. This order is the 22d in Jussieu's system, or the 4th of his 4th class, *monocotyledones, Stamibus epigynis*. The character he gives is,

"Calyx of one leaf, superior, undivided, or divided, the segments disposed either in a simple or double row, the inner ones often petal-like. Stamens either definite or indefinite, situated upon the pistil. Germen simple, inferior."

style either simple, or definitely manifold, or none; stigma simple or divided. Fruit inferior, of one or many cells. The plants are herbaceous aquatics."

As Jussieu included the *Cyamus*, or *Nelumbo*, in this order, he was obliged to make an exception, on account of its superior germen, but there having been scarcely any other reason for such an arrangement than its being a water plant, the cotyledons being two, and the other characters as different from the *Hydrocharides* as can well be, this difficulty is removed, and *Cyamus* goes to the *Papaveraceæ*, with *Nymphaea*, and *Nuphar* of Smith in Prodr. Fl. Græc. Sibth. —The other genera in Jussieu are *Valisneria*, *Stratiotes*, *Hydrocharis*, *Trapa*, *Proserpinaca*, and *Pistia*, the three last very dubious at best as to their claim to a place here.

Mr. R. Brown, in his Prodr. Nov. Holl. v. 1. 345, reckons *Najas*, *Lemna*, and *Chara*, as akin to the natural order in question.

HYDROCHÆRIS, in the Linnæan system of Zoology, a species of hog found at Surinam. See *CAVIA Capybara*.

HYDROCHARIS, in Botany, from ὑδρῶς, water, and χαρῆς, to rejoice, because this genus, from its beauty, may be considered as the glory or pride of the water.—Linn. Gen. 527. Schreb. 695. Mart. Mill. Dict. v. 2. Sm. Fl. Brit. v. 3. 1084. Ait. Hort. Kew. v. 3. 409. Juss. 67. Lamarck Illustr. t. 820. (*Stratiotes*; Dill. Gen. 9.)—Class and order, *Diccia Enneandria*. Nat. Ord. *Palmeæ*, Linn. *Hydrocharidites*, Juss.

Gen. Ch. Male, *Cal.* Spathe three-flowered, of two leaves, oblong; perianth of three ovate-oblong, concave leaves, membranaceous at the margin. *Cor.* Petals three, roundish, flat, large. *Stam.* Filaments nine, awl-shaped, erect, arranged in three rows, of which the middle row puts forth an awl-shaped stem, from its inner base, like a style, which is placed in the centre; the two other rows are so connected at the base, that each inner filament coheres with the outer; anthers simple. *Pist.* none, except the above rudiment of a germen. Female, *Cal.* Spathe none; flowers solitary; perianth as in the male, superior. *Cor.* as in the male flowers. *Pist.* Germen roundish, inferior; styles six, as long as the calyx, compressed, bifid, channelled; stigmas bifid, pointed. *Peric.* Capsule leathery, roundish, six-celled. *Seeds* numerous, very small, roundish.

Ess. Ch. Male, Calyx three-cleft. Petals three. The three interior filaments beaked. Female, Calyx three-cleft. Petals three. Styles six. Capsule inferior, with six cells, and many seeds.

Obs. This genus is very nearly allied to *Stratiotes*.

1. *H. Morfus Ranæ*. Common Frog-bit.—Linn. Sp. Pl. 1466. Engl. Bot. t. 808. Curt. Lond. fasc. 3. t. 64. (*Morus Ranæ*; Ger. Em. 818.)—Found on the surface of ditches and slow streams, plentifully in the neighbourhood of London, flowering in July and August. This perennial aquatic, every part of which is smooth, floats on the surface, throwing out from its joints clusters of leaves and flowers. *Roots* straight and simple, descending into the mud. *Leaves* on footstalks, kidney-shaped, entire, generally purple beneath. The female stalks are quite simple, single-flowered, having a spathe at the base; males umbellated, three or four-flowered, with a pair of bractæas at the base of the partial flower-stalks. *Flowers* white, elegant, and showy, with large, roundish, corrugate petals, yellow at the base.—Ray mentions a variety with fragrant double flowers, which Mr. Relham informs us is not now to be found in the place he indicates. Flowers with six petals now and then occur. Engl. Bot.

HYDROCHOOS, in Astronomy, derived from ὑδρῶς, water, and χῶς, I pour. See *AQUARIUS*.

HYDROCORAX, in Ornithology. See *HORN-bill*.

HYDROCOTYLE, in Botany, from ὑδρῶς, water, and κοτύλη, a cavity which forms a sort of cup, because the leaves of the original species are round and concave, and it grows in watery places. This name was bestowed by Tournefort. Its English appellation is Pennywort, or White-Rot.—Linn. Gen. 127. Schreb. 178. Willd. Sp. Pl. 1360. Mart. Mill. Dict. v. 2. Sm. Fl. Brit. v. 1. 290. Ait. Hort. v. 1. 327. Juss. 226. Tournef. t. 173. Lamarck Dict. v. 3. 151. Illustr. t. 188. Gært. t. 22.—Class and order, *Pentandria Digynia*. Nat. Ord. *Umbellatæ*, Linn. *Umbelliferæ*, Juss.

Gen. Ch. *Cal.* Umbel generally simple; involucre most commonly of four leaves, small; perianth scarcely any. *Cor.* Universal, uniform in figure, not in situation; all the flowers fertile; partial, of five ovate, acute, spreading, entire petals. *Stam.* Filaments five, awl-shaped, shorter than the corolla; anthers very minute. *Pist.* Germen erect, compressed, circular, inferior, peltate; styles two, awl-shaped, very short; stigmas simple. *Peric.* none; fruit orbiculate, compressed, transversely divisible into two parts. *Seeds* two, semi-circular, compressed.

Ess. Ch. Umbel simple. Involucre of about four leaves. Petals undivided. Fruit orbiculate, compressed.

Linnæus originally reckoned only five species of *Hydrocotyle*; professor Martyn enumerates fifteen, and Willdenow eighteen, from the Supplementum and other books. The author of English Botany observes that "the name of White-rot was given to *H. vulgaris*, from a supposition that this plant caused the disease in sheep called the rot; but it is doubtful if they will ever taste it, and most people now attribute that disease to the animals inhabiting wet pastures, where indeed the *Hydrocotyle* grows, but which are in some other way noxious to their constitution."

1. *H. vulgaris*. Marsh Pennywort. White-rot. Linn. Sp. Pl. 338. Engl. Bot. t. 751. Curt. Lond. fasc. 6. t. 19.—"Leaves peltate. Umbels of five flowers."—Found on marshes, and in moist places that are subject to be inundated, flowering throughout the months of May and June.—*Root* perennial. *Stems* creeping, thread-shaped. *Leaves* opposite, on foot-stalks, peltate, horizontal, roundish, crenate, pale green, smooth, clear. *Flower-stalks* axillary, solitary, or twin, having a pair of bractæas at their base. *Umbel* small, dense, generally five-flowered, often producing another umbel from its centre. *Flowers* white or bluish-coloured, with acute petals.

The leaf of this plant is usually referred to as a perfect specimen of what Linnæus intended for a peltate leaf. The common Nasturtium of our gardens, *Tropæcium majus*, is however a more familiar and an equally correct instance.

2. *H. inundatum*. Floating White-rot. Sm. Fl. Brit. v. 1. 290. (*Sifon inundatum*; Linn. Sp. Pl. 363. Engl. Bot. t. 227.)—"Leaves pinnate, jagged; those which are immersed, in capillary segments. Umbels in pairs, each consisting of five flowers."—Not very unfrequent in ditches and pools among other aquatics, flowering in May.—*Root* most probably biennial. *Stems* creeping, floating, round. *Leaves* alternate, on dilated stalks which embrace the stem, unequally pinnate; leaflets oblong, trifid, often pinnatifid. *Flower-stalks* opposite to the leaves, bifid, divaricated. *Umbels* solitary, five-flowered. *Flowers* white, having acute, equal petals. *Fruit* elliptical, striated.

This species of *Hydrocotyle* is referred hither from *Sifon* solely on the authority of the *Flora Britannica*. This and the preceding are the only species indigenous to Great Britain.

3. *H. umbellata*. Linn. Sp. Pl. 338. Swartz Obs. III. —Leaves

—Leaves peltate, umbels many-flowered.—Native of damp places in America, and particularly in Jamaica.—This species is very nearly allied to *H. vulgaris*, but differs in having the flower-stalk twice as long as the leaves, and instead of five flowers, more than twenty crowded together so as to form a simple umbel.

4. *H. bonariensis*. Willd. n. 3. Lamarck Dict. v. 3. 153.—“Leaves somewhat peltate, kidney-shaped or roundish, crenate. Umbel compound; rays branched, flowering at the top and sides.”—Found by Commerçon on the sea-shore of Buenos Ayres near Monte Video.—The whole plant is smooth. Branches trailing on the ground, a foot or more in length. Leaves on foot-stalks, crenulated, or obscurely lobed, having a sort of arch-work from the base to the centre. Foot-stalk inserted close to the summit of this arch, so as to make the leaves umbilical or imperfectly peltate. Flowers yellowish.

5. *H. americana*. Linn. Sp. Pl. 338. Læf. it. 281.—“Leaves kidney-shaped, somewhat lobed, crenate.”—A native both of North and South America.—Similar in appearance and magnitude to *H. vulgaris*, but it differs in having its leaves separated half way down by a narrow sinus, their margin divided into nine obsolete lobes, each of which is marked by three smaller crenulations. Umbel five-flowered.—A variety of this, much smaller in all its parts, appears in the Linnæan herbarium communicated by M. Cuffson.

6. *H. hirsuta*. Willd. n. 5. Swartz. Ind. Occ. n. 1. 560. Hairy.—Leaves kidney-shaped, lobed, crenate. Whorls four-flowered.—Native of St. Domingo, flowering in June and July.—Stem herbaceous, creeping. Leaves on foot-stalks, obtusely five or seven-lobed, nervose, veined. Stipulas small, at the base of the footstalks. Flowers whorled, greenish, each one furnished with a linear, obtuse, hairy leaflet not longer than the germen. The whole plant is thickly covered with whitish hairs.

7. *H. moschata*. Willd. n. 6. Forst. Prod. n. 135.—Leaves kidney-shaped, seven-lobed, ferrated, villose. Umbels many-flowered.—This is a native of New Zealand. We know nothing of it but from the authorities above quoted.

8. *H. asiatica*. Linn. Sp. Pl. 338. (Ranunculo affinis; Pluk. Alm. 314. t. 106. f. 5.)—“Leaves kidney-shaped, equally toothed or crenate.”—Native of the East Indies and Cape of Good Hope, flowering in July. It was introduced into this country by Mr. F. Masson in 1774.—This species is nearly allied to *H. americana*, but differs in having the denticulations of its leaves equal or regular; the leaves are twice as thick, and almost hoary, with many footstalks from the joints of the stem, whilst in *H. americana* the leaves are solitary.

9. *H. chinensis*. Linn. Sp. Pl. 339.—“Leaves linear, umbels many-flowered.”—Native of North America, not of China.—Stem creeping. Leaves linear, smooth, obtuse, flat, often in pairs at the joints of the stem. Scapus the length of the leaf. Umbel many-flowered.—We are not acquainted with any figure of this species.

10. *H. erecta*. Willd. n. 8. Linn. Suppl. 177.—“Leaves heart-shaped, crenate. Stalk with few flowers, the length of the leaf-stalks.—Native of Jamaica.—Leaves obtuse, acutely dentated, an inch long; footstalks radical, a span long, hairy at the top. Scapi radical, with a few flowers at their summit, erect, as is the whole plant, not creeping.

11. *H. villosa*. Willd. Sp. Pl. n. 9. Linn. Suppl. 175.—“Leaves heart-shaped, entire, downy or villose.”—A native of the Cape of Good Hope.—Root fibrous. Stems prostrate, bearing leaves and flowers at their summits.

Leaves on foot-stalks, undivided, resembling *Viola cœbrata*. Flower-stalks many, from the top of the stems, filiform, shorter than the leaves, single-flowered. Flowers small.

12. *H. glabrata*. Willd. Sp. Pl. n. 10. Linn. Suppl. 176.—Leaves obovate or lanceolate, acute, three-nerved, very smooth.—Found at the Cape of Good Hope.—Whole plant extremely smooth. Stem angulated, rigid, geniculated; leaves growing at the joints, and both leaves and flowers towards the summit of the stem.

13. *H. Spananthe*. Willd. Sp. Pl. n. 11. (Spananthe paniculata; Jacq. Ic. Rar. v. 2. t. 350.)—Stem erect. Leaves triangular, pointed, ferrated, bearded at their base.—Native of South America.—Referred to this genus by Willdenow, of which we doubt the propriety. It has a tall branching stem, and prolificus umbels.

14. *H. ranunculoides*. Willd. n. 12. Linn. Suppl. 177. Leaves cut into five deep segments. Umbels simple.—Sent by Mutis from Mexico.—Stem creeping, jointed, fibrous. Leaves solitary, or in pairs, very similar to those of a *ranunculus*; the segments three-lobed, obtuse; foot-stalks about three inches long. Flower-stalk an inch in length. Umbel simple. Petals white.

15. *H. paniculifolia*. Willd. n. 13. Lamarck Dict. v. 3. 154. Illustr. t. 188. f. 1.—Leaves three or five-lobed, toothed. Umbel compound.—Gathered by Commerçon at Buenos Ayres, and on his authority referred by Willdenow to this genus.

16. *H. solandra*. Willd. n. 14. Linn. Suppl. 176. Lamarck Illustr. t. 188. f. 5. (Solandra capensis; exclusis synonymis; Linn. Sp. Pl. 1407.)—Leaves wedge-shaped, ovate, retuse.—Sent from the Cape of Good Hope.—Root branching on the surface of the ground. Whole plant covered with whitish downyness. Leaves alternate, wedge-shaped or obovate, seven-toothed. Flower-stalks amongst the lower leaves, lateral. Receptacle of the flowers dark purple. Petals white.

17. *H. tridentata*. Willd. n. 15. Linn. Suppl. 176.—Leaves linear-wedge-shaped, three-toothed at the top.—Found by Sparrmann at the Cape of Good Hope.—Very similar in habit to the preceding species, but differs in having the stems shorter, woolly, and not prostrate. Leaves with three equal teeth at their top. Flower-stalks much shorter than the leaf.

18. *H. linifolia*. Willd. n. 17. Linn. Suppl. 176.—Leaves linear-lanceolate, hirsute, entire.—A native also of the Cape of Good Hope, and very nearly akin to the following species.

19. *H. virgata*. Willd. n. 18. Linn. Suppl. 176. Thunb. Prod. 49. Lamarck Illustr. t. 188. f. 3.—Leaves linear, smooth.—Communicated to Linnæus by Thunberg, from the Cape of Good Hope.—Stem upright, jointed, nearly smooth. Leaves channelled within side, dilated at their base. Umbels lateral, simple.

HYDRODES FEBRIS, in *Medicine*, a fever in which the patient is, from the beginning, afflicted with very copious and weakening sweats, and great weakness.

HYDRODYNAMICS, of ὑδρῶς, *water*, and δυναμικῶς, *force*, is used for the science of the laws of the motion of fluids, and denotes much the same with hydraulics. See FLUID and HYDRAULICS.

HYDROENTEROCE'LE See HYDRÉENTEROCÉLE.

HYDROGEN, HYDROGENOUS GAS, or *Inflammable Air*, is an elastic fluid of extreme subtilty and levity. It is ascertained to be nearly $\frac{1}{12}$ th of the weight of an equal bulk of common air, or only $\frac{1}{137500}$ th of the weight of an equal bulk of water, being by much the lightest ponderable substance with which we are acquainted. It is, on this account,

HYDROGEN.

that balloons are filled with it. The weight of a cubic foot of hydrogen gas, at the common temperature and pressure, is not more than $2\frac{1}{2}$ grains; whereas the same volume of common air weighs 31 grains. It is not only in the elastic state that hydrogenous gas exhibits extreme levity, but also the ultimate particle of it, according to the investigations of Mr. Dalton, is lighter than that of any other body, on which account he makes it the unit or standard of comparison in weight. See GAS.

Hydrogenous gas may be procured by various processes; the most simple and easy one is to take some turnings or filings of zinc or iron, and put them into a gas bottle, to which add their weight of water, and about $\frac{1}{3}$ th of its volume of concentrated sulphuric acid. A violent effervescence ensues, and the gas is generated in great abundance, and may be received over water in the usual way. The rationale of the process seems this; the metals have a strong affinity for oxygen, but not equally so for hydrogen; they are not of themselves sufficiently powerful to effect an union with the oxygen and a detachment of the hydrogen, but by the aid of the acid they can accomplish it, and the acid afterwards unites with the new compound or oxyd, forming a salt, called a *sulphate*. Hence the hydrogen is derived from the water. Another method of obtaining hydrogen is to send steam over red-hot iron shavings in a gun-barrel; in this case, the iron unites with the oxygen, and the hydrogen is liberated in the gaseous form.

The properties of hydrogen gas are, 1st. *It is the lightest of all gases*, as has been observed, and may be proved, by actually weighing it in an air-bottle fitted up for such purposes, which has previously been exhausted and weighed. But there are several simple experiments by which it may be shewn to be much lighter than common air; namely, if a jar be filled with hydrogen, and then uncovered for a moment, the hydrogen will escape, but not if the jar be placed with its mouth downwards, as will be proved by putting a lighted taper into the jar, which will not be affected in the former case, but extinguished with a slight explosion in the latter. If, instead of a jar, a tube of 12 inches long and $\frac{1}{4}$ inch diameter be filled with hydrogen, it will be five minutes in losing one-half of its gas, and that the same whether held up or down. (See Nicholson's Journal, vol. viii. p. 148.) This serves to shew that the effect of a difference in specific gravity is not perceived unless a sufficiently large volume or body of air can move together. If bubbles of soap and water be raised with hydrogen they ascend in the air like balloons. If a volume of hydrogen be gently placed over a volume of common air, they do not mix immediately, but in due time they are found mixed completely, whatever caution may be used to prevent agitation, and they remain mixed ever afterwards. (See Manchester Mem. vol. i. second Series, p. 262, and Memoires d'Arcueil, tom. ii. p. 466. This curious fact, which is of a general nature, and by no means peculiar to hydrogen and common air, was first observed by Priestley, and is ascribed by Dalton to the mechanism of elastic fluids; but most others have thought it an effect of chemical affinity.

2d. *Hydrogen gas is fatal to animals*, as is proved by confining a mouse or other small animal in it for a few moments.

3d. *It is inflammable*. This quality is shewn by applying a taper to a phial of the gas with its mouth downwards; a slight explosion will be observed succeeded by a lambent flame. If a bladder be filled with the gas, and then the gas be gently driven out through a small tube, such as a tobacco-pipe, it will take fire with a candle and burn with a reddish flame. A mixture of one part hydrogen and two common air, or two hydrogen and one oxygen, in a small phial, ex-

plodes violently by being presented to a flame. The same effect may be produced by an electric spark in a glass vessel, called an inflammable air-pistol; or a strong brass tube, called Volta's eudiometer, may be partly filled with a mixture of hydrogen and oxygen, and the mixture exploded over water or mercury by electricity. In this way the quantity of hydrogen or oxygen in mixtures of gases may be ascertained. (See EUDIOMETRY.) If a bladder, filled with hydrogen and common air, or oxygen, in the proportions above-mentioned; have its contents infused into bubbles of soap and water, they will explode with a loud report by a taper, and the bladder itself will burst with a tremendous report if the flame be applied to it or to the bubbles before they quit the pipe of the bladder.

4th. *Hydrogen gas, though inflammable itself, yet extinguishes flame*. If a jar of hydrogen be put over the flame of a candle, so as to surround it, the flame is instantly extinguished.

5th. A mixture of oxygen and hydrogen has been made to explode by mechanical condensation, by M. Biot.

6th. In the slow combustion of hydrogen, when the flame is confined in a long tube, under certain circumstances, a musical sound is produced.

7th. Hydrogen, when united to oxygen, produces water; when it is united to azote the product is ammonia; when united to carbon it forms olefiant gas, carburetted hydrogen, oil, &c.

8th. It contains half as many atoms in the same volume as oxygen gas.

HYDROGEN, Sulphuretted, in Chemistry, a compound of sulphur and hydrogen, which usually owes its origin to the decomposition of water in the processes by which it is formed, and is generated in various processes, in which its elements are presented to each other in a nascent, or condensed state. It was first procured from solutions in water of the compounds of sulphur with the fixed alkalies. When sulphur is combined with potash, soda, or lime, on dissolving the compound in water, a partial decomposition takes place; one part of the sulphur combines with part of the oxygen of the water, forming sulphuric acid, which unites with the potash; another part of the sulphur unites with the hydrogen of the water, forming sulphuretted hydrogen. This gas is produced likewise by exposing to a strong heat mixtures of sulphur with vegetable matter, as sugar, oil, or powdered charcoal; the hydrogen existing in vegetable substances combining with the sulphur; in these processes the gas is, very rarely, quite pure, or of an uniform composition. The specific gravity of sulphuretted hydrogen is to that of atmospheric air, as about 1.14 to 1.00, a hundred cubical inches weighing 33 grains. Its smell is extremely fetid; the effluvia disengaged in putrefaction consist chiefly of this gas. Its properties are, that it extinguishes combustion, and is wholly incapable of supporting animal life. It is absorbed by water, the water taking up more than its volume, or 100 cubical inches of water will absorb 108 inches of this gas. It has a peculiar action on the metals, and tarnishes them very quickly, communicating shades of yellow, brown, or purple, with a diminution of metallic lustre. This curious gas is possessed of the properties of an acid, enters into combination with the alkalies, and forms compounds, some of which are crystallizable. It is capable of changing vegetable colours to a red. It decomposes soap, combines with the metallic oxyds, and precipitates sulphur from its combinations. The compounds of sulphuretted hydrogen with the fixed alkalies, are readily formed by passing a current of it in its elastic state through the alkaline solution. These compounds are called **HYDRO-SULPHURETS**, which see. Sulphuretted hydrogen is capable of combining with an additional proportion of sulphur, and in this state the compound is denominated super-sulphuretted

retted hydrogen. "The knowledge," says Mr. Murray, "which we have acquired of sulphuretted hydrogen, and of its combinations, has thrown light on the composition of mineral sulphureous waters, and of the changes which they suffer. As sulphur is itself insoluble in water, and as frequently no traces of an alkali, by which it might be rendered soluble, could be discovered in these waters, chemists found it difficult to conjecture by what means its solution was effected. The discovery of sulphuretted hydrogen, and of its solubility in water, solved this difficulty, and the mutual action exerted between it and oxygen, elucidates the changes these waters suffer from exposure to the air." Murray's Chemistry, vol. 2. See MINERAL WATERS.

HYDROGEN, *Super-sulphuretted*. See HYDRO-SULPHURETS.

HYDROGEN Gas, in *Agriculture*, the modern name of an elastic fluid, formerly denominated inflammable air. Its effects on vegetation have not yet been ascertained.

HYDROGETON, in *Botany*, from *ὕδωρ*, water, and *γενεω*, a neighbour, from the circumstance of its being an aquatic plant. Such is the name given by Loureiro, which is of a rather extensive application, but justifiable by the analogy of *Potamogeton*, which it evidently imitates.—Loureir. Cochinch. v. 1. 244.—Class and order, *Oëandria Tetragynia*. Nat. Ord. *Imbricate*, Linn. *Naiades*, Juss.

Gen. Ch. *Cal.* Perianth none. *Cor.* inferior, petals four, roundish, inflexed, furnished with a slender, short, incurved claw. *Stam.* Filaments none; anthers eight, ovate, affixed to the receptacle. *Pist.* Germens four, ovate, style none; stigmas four, oblong, erect. *Peric.* Capsules four, ovate, single-seeded. *Seeds* of a similar shape.

Ess. Ch. Calyx none. Corolla of four roundish petals, each furnished with a claw. Capsules four. Seeds solitary.

1. *H. heterophyllum*. Loureir. Cochinch.—"Lower leaves awl-shaped, or linear, upper ones ovate, pointed."—Native of rivers and marshes in Cochinchina. *Stem* procumbent, long, branching, immersed in the water. *Leaves* entire, smooth. *Flowers* green, small, in oblong, arched, terminal, naked spikes.

Loureiro observes that he separated the present genus from *Potamogeton* chiefly on account of the number of its stamens. Whether this distinction be sufficient to establish his genus, we greatly doubt, or rather, we think it quite inadequate. The Cochinchinese name of the plant is *Raong hai thú lá*.

HYDROGRAPHICAL MAPS, more usually called *sea charts*, are projections of some part of the sea, in plano, for the use of navigation.

In these are laid down all the rhumbs, or points, of the compass, the meridians, parallels, &c. with the coasts, capes, islands, rocks, shoals, shallows, &c. in their proper places, proportions, &c.

Christopher Columbus, the first great discoverer of America, was a man that earned his living by making and selling hydrographical maps. He happened to be heir to the memoirs or journals of a noted pilot, one Alonzo Sanchez de Huelva, captain of a ship, who, by chance, had been driven by a storm to the island of St. Domingo, and died at Columbus's house soon after his return. This gave Columbus the first hint to attempt a discovery of the West Indies, in which he succeeded.

For the construction of the several kinds of hydrographical maps, see CHART.

For their uses, see SAILING.

HYDROGRAPHY, compounded of *ὕδωρ*, aqua, water, and *γραφω*, I describe, that part of geography which considers the sea; principally, as it is navigable.

Hydrography teaches how to describe and measure the sea; it gives an account of its tides, counter tides, currents, soundings, bays, gulfs, &c. as also of its rocks, shelves, sands, shallows, promontories, harbours, distances, &c. from port to port; with all that is remarkable, either out at sea, or on the coast.

Some of the best authors use the term in a more extensive sense; so as to denote the same with *navigation*.

In this sense hydrography includes the doctrine of sailing; the art of making sea charts, with the uses thereof; and every thing necessary to be known, in order to the safest and most expeditious performance of a voyage. See SAILING.

Hydrography is the most perfect of all the mathematical sciences; there being scarcely any thing wanting to its perfection, but the accurate discovery of the longitude.

The Jesuits Ricciolus, Fournier, and De Chales, have written on the subject of hydrography.

In France they have professors of hydrography established in all their sea-ports, who are to instruct the youth intended for the sea in all the parts of navigation, sailing, steering, &c. with the several branches of mathematics necessary thereto; as arithmetic, and the doctrine of the sphere, and trigonometry.

They are royal professors, and teach gratis; having salaries allowed them. They are also charged with the examination of pilots, &c.

HYDROLEA, in *Botany*, was so named by Læssing, though we are unable to trace its derivation.—Læss. It. 310. Linn. Gen. 124. Schreb. 173. Willd. Sp. Pl. v. 1. 1327. Mart. Mill. Dict. v. 2. Juss. 134. Lamareck. Illustr. t. 184. Gærtn. t. 55.—(Coutarde; Lamareck. Dict. v. 2. 161.)—Class and order, *Pentandria Digynia*. Nat. Ord. *Convolvuli*, Juss.

Gen. Ch. *Gal.* Perianth of five, awl-shaped, erect, unequal, permanent leaves. *Cor.* of one petal, wheel-shaped or campanulate; tube shorter than the calyx; limb spreading, divided into five, ovate, incumbent, obtuse segments. *Stam.* Filaments five, awl-shaped, incurved, heart-shaped at the base; anthers oblong, curved, incumbent. *Pist.* Germen superior, ovate; styles two or three, thread-shaped, spreading; stigmas truncated. *Peric.* Capsule ovate, two-valved, two-celled, with a parallel partition. *Seeds* numerous, very small, imbricated; receptacle ovate, large.

Ess. Ch. Calyx of five leaves. Corolla wheel-shaped. Filaments heart-shaped at the base. Capsule of two cells and two valves.

Obf. Aublet has remarked that in some flowers the calyx and corolla are six-cleft, with six stamens.

1. *H. spinosa*. Linn. Sp. Pl. 328. Aubl. Guian. 281. t. 110.—Leaves lanceolate, hairy. Flowers clustered, terminal.—Native of South America, particularly in moist situations at Guiana and Cayenne, flowering at various times of the year.—The whole *strub* is extremely bitter, having a fibrous root, from which arise one or more stems about three feet high, straight, branched, woody, overspread with a viscous downyness. *Leaves* alternate, nearly sessile, lanceolate, entire, downy, clammy. *Spines* axillary, awl-shaped, straight, spreading. *Flowers* corymbose, of a blue colour, each one furnished with a sort of leafy scale at the base.

2. *H. inermis*. Loureir. Cochinch. 172. Mart. Mill. Dict. v. 2.—Stem spineless. Flowers solitary, lateral.—Found in moist places about Canton. *Stem* herbaceous, annual. *Leaves* lanceolate-linear, smooth, sessile, scattered. *Flowers* blue. Loureiro observes that he could not distinguish whether or not the filaments were cordate at their base.

3. *H. trigyna*. Willd. n. 2. Swartz. Ind. Occ. v. 1. 558.—Leaves

Leaves oblong, hairy. Flowers with three styles, axillary. Found by Dr. Houtton near Vera Cruz: *Shrub* armed with spines, hairy. *Leaves* alternate, sometimes approaching to nearly opposite, oblong, rather acute, entire. *Spines* solitary, half an inch long, spreading. *Flowers* blue, axillary, generally solitary, on stalks.

4. *H. zeylanica*. Willd. n. 3. Vahl. Symb. p. 2. 46. (Nama; Linn. Fl. Zeylan. 117. t. 2. N. zeylanica; Sp. Pl. 327. Steris javana; Mant. 54.)—*Leaves* lanceolate, smooth. *Flowers* with two styles, somewhat clustered.—Native of the East Indies.—*Stem* herbaceous, about six inches high, erect, branched. *Leaves* alternate, on footstalks, smooth, entire, spreading. *Clusters* simple, erect, the length of the leaves. *Flowers* alternate, as long as the partial stalks.

HYDROLOGY, compounded of ὕδωρ, *water*, and λογος, *science*, denotes that part of natural history which examines and explains the nature and properties of water in general. See **WATER**.

HYDROMANCY, ὑδρομαντεια, compounded of ὕδωρ, *water*, and μαντεια, *divination*, the act, or art, of divining, or foretelling future events, by means of water.

Hydromancy is one of the four general kinds of divination (see **DIVINATION**): the other three respecting the other elements, viz. fire, air, and earth, are denominated pyromancy, aeromancy, and geomancy.

Varro mentions the Persians as the first inventors of hydromancy, adding, that Numa Pompilius, and Pythagoras, made use of it.

This species of divination was performed in various ways: sometimes they used invocations and magic ceremonies, in consequence of which they discovered the names of certain persons, or events, which they wished to know upon the water: sometimes they suspended a ring by a thread over a vessel full of water, and struck the sides of the vessel with it a certain number of times; they also formed presages by casting small stones into still water, and observing the circles hereby formed on the surface of the water; by examining the various agitations of the waves of the sea; by observing the colour of the water, and the figures represented in it, &c. &c. See an account in Delrio Disquis. Magic. lib. iv. quest. 6. sect. 3.

The writers in optics furnish us with divers hydromantic machines, vessels, &c.

To construct an hydromantic machine, by means whereof an image, or object, shall be removed out of the sight of the spectator, and restored again, at pleasure, without altering the position, either of the one or the other. Provide two vessels, A B F, C G L K (*Plate VIII. Hydraulics, fig. 4.*); the uppermost filled with water, and sustained by three little pillars, one whereof, B C, is hollow, and furnished with a cock B. Let the lower vessel C L be divided by a partition H I into two parts; the lower of which may be opened, or closed, by means of a cock at P.

Upon the partition place an image, which the spectator in O cannot see, by a direct ray G L.

If now the cock B be opened, the water descending into the cavity C I, the ray G L will be refracted from the perpendicular G R to O; so that the spectator will now see the object by the refracted ray O G. And again shutting the cock B, and opening the other P, the water will descend into the lower cavity H L; whence the refraction ceasing, no rays will now come from the object to the eye: but shutting the cock P again, and opening the other B, the water will fill the cavity again, and bring the object in sight of O afresh.

To make an hydromantic vessel, which shall exhibit the images of external objects, as if swimming in water. Pro-

vide a cylindrical vessel A B C D (*Plate VIII. Hydraulics, fig. 5.*) divided into two cavities by a glass E F, not perfectly polished: in G apply a lens convex on both sides; and in H incline a plain mirror, of an elliptic figure, under an angle of 45°; and let I H and H G be something less than the distance of the focus of the lens G: so that the place of the images of an object radiating through the same may fall within the cavity of the upper vessel: let the inner cavity be blackened, and the upper filled with clear water.

If, now, the vessel be disposed in a dark place, so that the lens be turned towards an object illuminated by the sun, its image will be seen as swimming in the water.

HYDROMEL, ὑδρομελι, composed of ὕδωρ, *water*, and μελι, *honey*, a drink made of water and honey, nearly in equal quantities; called also by the Greeks, μελιπαιον.

When this liquor has not fermented, it is called *simple hydromel*; and *compound* when other ingredients are added to the water and honey, in order to improve and exalt the flavour and virtues.

When it has undergone the spirituous fermentation, it is called the *vinous hydromel*, or mead and metheglin. To induce this fermentation, nothing is necessary but to dilute the honey sufficiently in water, and to expose the liquor to a convenient degree of heat.

Hydromel is the common drink of the Poles and Russians. Diodorus Siculus, lib. v. and Aristotle, relate, that the Celtiberi, and Taulantii, ancient people of Illyria, drank hydromel instead of wine.

HYDROMELON, a name given by the ancients to a liquor prepared with one part of honey, impregnated with the juice of quinces, and two parts of boiled water, set in the sun during the dog-days.

HYDROMETER, compounded of ὕδωρ, *water*, and μετρον, *measure*, an instrument wherewith to measure the gravity, density, velocity, force, or other properties of water.

The extensive use of the knowledge of the specific gravities of bodies has produced a variety of contrivances, under the name of *Essay Instrument*, *Hydrometer*, *Areometer*, *Gravimeter*, *Pese-liqueur* or *Water-poise*, for the purpose of ascertaining the specific gravities of different bodies, both solid and fluid, in an expeditious manner.

From Lowthorp's abridgment of the Philosophical Transactions, vol. i. p. 516, &c. or Boyle's Works, 4to. London ed. 1772. vol. iv. p. 204, &c., it appears, that the hydrometer was first invented by Boyle, and described under the name of a New Essay Instrument. It consisted of a ball, somewhat less than an hen's egg, with a graduated stem, four or five inches in length, soldered to the upper part, and by means of a stirrup or slit piece of brass underneath, it was applied, as perfectly as a graduated instrument could be, to ascertain the specific gravities of solids as well as fluids. To extend the use of the instrument, Boyle proposes that the ball should be made large, and provided with an appendage for occasionally changing the quantity of ballast applied beneath the ball. (See **AREOMETER**.) Boyle's instrument was intended to be used in water, and, consequently, the graduations of its stem denoted certain invariable weights. But when the hydrometer is to be used in various fluids, it diminishes the accuracy of the results, if those spaces be taken for absolute weights; or, at all events, it brings forward a rather intricate consideration of the relation which the bulks of the spaces, or parts of the stem, have to the whole immersed part. Hence Fahrenheit first applied a dish, or scale, for weights at the top, in order to ascertain the specific gravities of fluids truly, and his instrument had only a single mark, that, in all cases, was to be brought to the surface of the fluid, by means of weights added in the above-mentioned scale;

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scale; as may be seen in Reid and Grey's abridgment of the Phil. Transf. vol. vi. pt. 1. p. 294.

The general principle on which the construction and use of the hydrometer depends, has been illustrated under the article *specific GRAVITY*: for it has there been shewn, that a body specifically lighter than several fluids will serve to find out their specific gravities; because it will sink deepest in the fluid whose specific gravity is the least, or, that a greater addition of weight is required to keep the same part of the floating body below the surface of a heavier than of a lighter fluid.

Thus, let *AB*, (*Plate IX. Hydraulics, fig. 1.*) be a small even glass tube, hermetically sealed, having a scale of equal divisions marked upon it, with a hollow ball of about an inch in diameter at bottom, and a smaller ball *C* under it, communicating with the first. Into the little ball put mercury or small shot, before the tube be sealed, so that it may sink in water below the ball, and stand upright, the divisions on the stem shewing how far it sinks. If this instrument be dipped in common water and sink to *D*, it will sink only to *E* in salt water; but in port wine it will sink to *F*, and in brandy under proof, it will perhaps sink to *B*. It is evident that an hydrometer of this kind will only shew that one liquid is specifically heavier than another; but the true specific weight of any liquid cannot be determined without a calculation for this particular instrument, the tube of which should be truly cylindric, and not tapering as they commonly are. Besides, these instruments will not serve for fluids, whose densities are considerably different. With a view of remedying these and some other inconveniences, Mr. Clark, in the year 1730, seemingly unapprized of what had been done before by Boyle and Fahrenheit, constructed a new hydrometer, for the use of dealers in brandy and spirits, that they might be able to determine, by inspection, whether any spirituous liquor be proof, above proof, or under proof, and exactly in what degrees. This instrument is made of copper, because ivory imbibes spirituous liquors, and glass is apt to break. It consists of a brass wire about one-fourth of an inch thick, passing through and foldered into the copper ball *Bb*, (*see fig. 2.*) The upper part of the wire is filed flat on one side of the stem of the hydrometer, and marked at *m*, to which division it exactly sinks in proof-spirits. There are two other marks *A* and *B*; the one shewing that the liquor is one-tenth above proof, when this instrument sinks to *A*, and the other indicating one-tenth under proof when it emerges to *B*; a brass weight, as *C*, having been previously screwed on to the bottom at *c*. There is a great variety of weights of different sizes, as *K*, &c. adapted to liquors that differ more than one-tenth from proof, and for determining the specific gravities of all such liquors as occur in trade, as well as for shewing the specific gravities of all fluids quite to common water. The round part of the wire above the ball may be marked across, as in *fig. 3*, so that with the weight as *C*, which fits the instrument for the trial of river water, in which it sinks to *RW*, it may serve for wines or other waters: thus in spring water it will sink to *SP*; in mineral water to *MI*; in sea-water to *SE*; and in the water of salt springs to *SA*: and the marks *br*, *ra*, *po*, *mc*, denote the divisions to which the instrument descends in Bristol water, rain water, Port wine, and Mountain wine, respectively. Phil. Transf. abr. vol. vi. p. 326, &c.

This hydrometer, says Mr. W. Nicholson, (*ubi infra*), is inferior to Fahrenheit's in two respects. In the first place, either a bubble of air, or a portion of the fluid, will be hid in that part of the cavity of the ballast weight, which is not filled by the screw; and it is of very different

consequence, which of the two is there. And secondly, the weights acting on the instrument, by their residual gravity, will not be constant; or, in other words, an additional weight will be accompanied by an addition to the bulk of the immersed part of the instrument; and in the case where the specific gravity of the liquid is not given, but required, it will not be easy to determine how much the operation of the one is counteracted by that of the other. However, though this last consideration evinces that the instrument is not fit for general use, yet it is accurate for the trial of ardent spirit, or any other particular liquid, when the weights are adjusted by experiment to the intended use.

Dr. Defaguliers contrived an hydrometer, for determining the specific gravities of different waters to such a degree of nicety, that it would shew when one kind of water was but one forty thousandth part heavier than another. This instrument (*see fig. 4.*) consists of *CBb*, a hollow glass ball of about three inches in diameter, with a small ball under it of about an inch in diameter. To a short neck at *C* there is fixed a brass head, with a fine screw, into which the piece *Cc* is to be screwed; and this piece is joined to a wire *CA*, about one-fortieth part of an inch in diameter, and ten inches long, which is divided into inches, and tenths of inches. Having put a certain quantity of small shot into the ball *b*, so that when the head *Cc* with its wire *CA* is screwed on, it shall sink as far as *D*, *e. g.* five inches, in river or soft spring water, we may know by observing how far this hydrometer sinks lower in one kind of water than another, their different specific gravity to a forty thousandth part, which corresponds with one-tenth of an inch marked on the stem *AC*. For let the hydrometer float in water in the jar *IKLM*, and the surface of the water cut the stem at *D*, a grain weight laid on the stem at *A* will cause the instrument to sink, till the mark *D* of the stem settles one inch under the surface; and, therefore, a grain depresses it an inch. The hydrometer weighs four thousand grains, and every inch of the graduated wire weighs ten grains; and, therefore, the part of it *DCBbcD* must weigh three thousand nine hundred and fifty grains. But it is known, from the principles of specific gravity, that a bulk of water equal to *DCBbcD* the immersed part, weighs just as much as the whole hydrometer, or four thousand grains: and, therefore, this instrument serves to compare together the different bulks of four thousand grains of water, according to their different specific gravities: and since the whole instrument is sunk an inch by the weight of one grain, and the instrument will stand at one-tenth of an inch, the difference indicated by it in waters in which it floats, it is evident that it will distinguish the tenth of a grain in four thousand, or the forty thousandth part of the whole bulk of water. By altering the quantity of shot in the ball *b*, the instrument may be prepared for the comparison of any other two liquors that are nearly of the same specific gravity. Defaguliers, &c. vol. ii. p. 234.

This instrument is capable of still greater exactness, by making the stem of a flat thin slip of brass or of steel, by which means we increase the surface without diminishing the solidity: on one side of this stem may be several marks denoting the depths to which the instrument would sink in various sorts of water, as rain water, river water, &c. and on the other side may be the divisions to which it would sink in lighter fluids, as hot Bath water, Bristol water, Port wine, &c. but in determining the strength of spirituous liquors, a cylindric stem is best.

Dr. G. Fordyce constructed an instrument, which is the most perfect we possess, its weights being adjusted to the

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different specific gravities of spirits by experiments made at numerous varieties of strength and temperature.

Mr. Quin's hydrometer has been recommended by many distillers, &c. on account of its accuracy, which requires only eighteen weights used on the top of the instrument, to shew all the under and over proofs to the certainty of one pint in a hundred gallons, from proof to seventy gallons to one hundred over proof, and to fifty gallons in a hundred under proof, which would require nine hundred and sixty-eight weights, besides forty-five air weights, according to the old construction of Clark's hydrometers. The weights are numbered 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 30, 40, 50, 100, 200, 300, 600, grains. He has also formed a table shewing the degrees of the thermometer, and the number of grains corresponding with each degree; the number of grains required for each strength; the over proofs, or the quantity of water necessary to reduce one hundred gallons of spirit to proof, with the former manner of expressing the several preparations, as one to two, one to three, &c. and likewise the under proofs.

There is one circumstance, which deserves particular attention in the construction and graduation of hydrometers for determining the precise strength of different brandies and other spirituous liquors. M. Reaumur, in making his spirit thermometers, discovered, that when rectified spirit and water, or phlegm, the other constituent part of brandy, are mixed together, there appears to be a mutual penetration of the two liquors, and not merely juxtaposition of parts; so that a part of the one fluid seems to be received into the pores of the other; thus, *e. g.* if a pint of rectified spirit be added to a pint of water, the mixture will be sensibly less than a quart. The variations hereby produced in the bulk of the mixed fluid render the hydrometer, when graduated in the usual way, by equal divisions, an erroneous measure of its strength; because the specific gravity of the compound is found not to correspond to the mean gravity of the two ingredients. M. Montigny constructed a scale for this instrument in the manner before suggested by Dr. Lewis, on actual observation of the sinking or rising of the hydrometer in various mixtures of alcohol and water, made in certain known proportions. *Hist. de l'Acad. Roy. Sciences, &c. Paris, for 1768. Memoire iv. Neumann's Chem. by Lewis, p. 450, note r. See Specific Gravity.*

M. De Luc has published a scheme of the construction of a comparable hydrometer, so that a workman, after having constructed one after his principles, may make all others similar to each other, and capable of indicating the same degree on the scale, when immersed in the same liquor of the same temperature.

For this purpose he proposes to use an hydrometer of the common construction, such as is represented in *fig. 5.* made of flint glass; because glass is a substance which undergoes the least change of bulk by heat, and its changes are the most regular. The ball *a* should be one and a half inch in diameter, with which should communicate a small hollow cylinder *b*, containing such a quantity of quicksilver for a ballast, that the instrument may sink nearly to the top in the most spirituous liquor, made as hot as possible. To the ball *a* is cemented a thin brass tube silvered over, or a silver tube *c c*, made perfectly cylindrical, by drawing it through a hole. This tube, or *branch*, as he calls it, should be long enough to admit the immersion of a small part of it in the less spirituous liquors, *e. g.* wine reduced to congelation. In order to determine a standard for the construction of the scale of this instrument, he forms a weak spirit of wine, by mixing one part of water with six parts of such spirits of wine as fire gun-powder, or lichen steeped in them. He also finds the

specific gravity of the mixture; at the temperature of fifty-four and a half of Fahrenheit's thermometer, by a nice hydrostatical balance. Having dipped the hydrometer into this spirit of wine, at the fixed temperature, he marks upon its branch or stem with a thread, the point to which it sinks; then preparing a sort of brandy stronger than the common; by mixing three parts of water with seven parts of this same spirit of wine, he determines the point on the stem to which the instrument would sink in it at the same temperature, and marks it with a thread. These points, *viz.* 45 and 15 in the figure, are the fixed points of the hydrometer. The interval between them may be divided into thirty equal parts, each of which will represent one-thirtieth part of the total effect of the superadded water, on the specific gravity of the liquor. This fundamental interval in instruments for common use may be divided into fifteen parts, which will then be double degrees. In order to find a convenient place for the 0 of this scale, M. De Luc proposes to reduce one of the wines of which brandy is commonly made, to the temperature of water in ice, and dipping the hydrometer in it, to observe how much higher it will stand than the inferior fixed point. This excess of emersion, compared with the fundamental scale, and reduced to the nearest number of degrees, which will be an aliquot part of it, will be a proportional quantity invariably fixed, to be added to the scale below the inferior fixed point, for determining the place of 0; *e. g.* let this excess of emersion be about 15°, or half the fundamental scale; then one should constantly add half the fundamental distance below the inferior fixed point, and thence begin to count the degrees: so that 0 would be at the bottom of the whole scale, the inferior fixed point would be at 15°, the superior at 45°, and the scale could be prolonged at the top as much as may be necessary for the essays of the most spirituous liquors. Another scale may be applied on the opposite side of the stem, for trying merely the specific gravity of the liquids in which the hydrometer may be dipped. The particular fixed points of this scale, *e. g. d, d*, may be taken in any two liquids, whose specific gravities, tried by the hydrostatic balance, shall have a convenient relation, and the space between those two points will be divided into a convenient number of equal parts. For the correction on account of the differences of heat, M. De Luc would take a liquor of mean spirituality; *e. g.* a mixture of one part of water, and seven parts of the spirits of wine determined by the hydrostatic balance; reduce this liquor to the temperature of 45° of Fahrenheit; plunge into it the hydrometer already graduated, and observe the point to which it sinks; he proposes afterwards to heat the liquor to 65°, and then to observe the sinking of the instrument. From this observation a table might easily be formed, in which we might express in degrees of the hydrometer, the effects of the differences of heat corresponding to each degree of the thermometer, beginning from a fixed point: or, a particular scale might be prepared for experiments of this nature, by changing the number of degrees contained between the fixed points, in order to establish an easy proportion between them and the degrees of the aerometer; and thus the correction might be made without tables. If an hydrometer of this kind were brought into general use, the police of the places in which the trade of spirituous liquors is carried on might take cognizance of it; and keep the public standard of the hydrometer or aerometer, as they keep the standard of weights and measures. *Phil. Trans. vol. lxxviii. part 1. art. 20. p. 500, &c. M. Le Roi has also published a proposal for constructing comparable hydrometers. Hist. de l'Acad. des Scien. Paris, for 1770. Mem. 7.*

Mr. William Nicholson some years ago made an attempt

HYDROMETER.

to combine Boyle's and Fahrenheit's instruments, and thus to adapt the hydrometer to the general purpose of finding the specific gravity, both of solids and fluids. A (*fig. 6.*) is a hollow ball of copper; B is a dish affixed to the ball by a short slender stem D; C is another dish affixed to the opposite side of the ball by a kind of stirrup. In the instrument actually made by the inventor, the stem D is of hardened steel, $\frac{1}{8}$ th of an inch in diameter, and the dish C is so heavy as in all cases to keep the stem vertical, when the instrument is made to float in any liquid. The parts are so adjusted, that the addition of 1000 grains in the upper dish B, will just sink it in distilled water, at the temperature of 60° of Fahrenheit's thermometer, so that the surface shall intersect the middle of the stem D. Let it be required to find the specific gravity of any fluid. Immerse the instrument in it, and by placing weights in the dish B cause it to float, so that the middle of its stem D shall be cut by the surface of the fluid. Then, as the known weight of the instrument, added to 1000 grains, is to the same known weight added to the weights used in producing the last equilibrium, so is the weight of a quantity of distilled water displaced by the floating instrument to the weight of an equal bulk of the fluid under consideration. And these weights give the ratio of the specific gravities. (*See Specific GRAVITY.*) Again, let it be required to find the specific gravity of a solid body less than 1000 grains. Place the instrument in distilled water, and put the body in the dish B. Make the adjustment of sinking the instrument to the middle of the stem, by adding weights in the same dish. Take those weights from 1000 grains, and the remainder will be the weight of the body. Place now the body in the lower dish C, and add more weight in the upper dish B, till the adjustment is again obtained. The weight last added will be the loss the solid sustains by immersion, and is the weight of an equal bulk of water. Consequently the specific gravity of the solid compared with water is as its weight to the loss it sustains by immersion. (*See Specific GRAVITY.*) When the instrument has been once adjusted in distilled water, common water may be afterwards used. Now the ratio of the specific gravity of the water made use of to that of distilled water being known ($= \frac{b}{a}$), and the ratio of the specific gravity of the solid to the water made use of being also known, ($= \frac{c}{b}$), the ratio of the specific gravity of the solid to that of distilled water will be compounded of both, (that is, $\frac{cb}{ab}$.) This instrument has been found to be sufficiently accurate to give weights true to less than one-twentieth of a grain. *Manchester Memoirs*, vol. ii. p. 386, &c. *Nicholson's Intro. to Nat. Phil.* vol. ii.

The hydrometer of Mr. Nicholson is highly commended by citizen Guyton in the description which he has given of a gravimeter, or instrument for measuring the specific gravity of solids and fluids, read to the National Institute at Paris, and inserted in the 21st volume of the *Annales de Chemie*. At present, he says, it is very much used; and gives, with considerable accuracy, the ratio of the specific gravity to the fifth decimal, water being taken as unity. It is susceptible of correction for the variations of temperature, and the impurity of the water which it is sometimes more convenient to use. It does not appear that any better instrument need be wished for in this respect. But this instrument, having hitherto been constructed in metal only, could not be applied either to salts or acids. M. Guyton, in order to remedy this and some other inconveniences to

which hydrometers are subject, has proposed, by following the principles of Fahrenheit, and executing the instrument of Nicholson in glass, with a slight addition, to render it more generally useful and commodious, without diminishing its accuracy in any respect. To his instrument he has applied the name of gravimeter. It is made of glass, of a cylindrical form, as being that which requires the smallest quantity of the fluid. Like the instrument of Nicholson it carries two basons; the one superior, at the extremity of a thin stem, towards the middle of which the fixed point of immersion is marked. The other lower bason terminates in a point; it contains the ballast, and is attached to the cylinder by two branches. The moveable suspension, by means of a hook, has the inconvenience of shortening the lever which is to secure the vertical position. The cylinder is 22 millimeters (0.71 inches) in diameter, and 21 centimeters (6.85 inches) in length. It carries in the upper bason an additional constant weight of five grammes. Guyton has added a piece which he calls the diver (*plongeur*), because it is in fact placed in the lower bason when used, and consequently is entirely immersed in the fluid. This is a bulb of glass, loaded with a sufficient quantity of mercury, in order that its total weight may be equal to the constant additional weight, added to the weight of the volume of water displaced by this piece. The weight, being determined at the same temperature at which the instrument was originally adjusted, will sink to the same mark on the stem, whether it be loaded with a constant additional weight in the upper bason, or whether the effect of this weight be produced by the additional piece (*plongeur*) in the lower dish. In using this instrument for solids, it differs in no respect from the hydrometer of Nicholson. The only condition being, like that in his, that the absolute weight of the body to be examined should be rather less than the constant additional weight, which in this instrument is five grammes (115 grains.) For liquids of less specific gravity than water, the instrument, without the above additional weight, weighs about two decagrammes (459 grains) in the dimensions before laid down. We have therefore the range of one-fifth of buoyancy, and consequently the means of ascertaining all the intermediate densities from water to the most highly rectified spirit of wine, which is known to bear in this respect the ratio of eight to ten with regard to water. When liquids of greater specific gravity than water are to be tried, the constant weight being applied below, by means of the additional piece (*plongeur*), which weighs about six grammes (138 grains), the instrument can receive in the upper bason more than four times the usual additional weight, without losing the equilibrium of its vertical position. In this state it is capable of shewing the specific gravity of the most concentrated acids. It possesses another property in common with the instrument of Nicholson, *viz.* that it may be used as a balance to determine the absolute weight of such bodies as do not exceed its additional load. And, lastly, the purity of the water being known, it will indicate the degrees of rarefaction and condensation in proportion to its own bulk. This instrument is rendered portable by means of a case, in which all the delicate parts are secured from pressure, and the heavier parts so supported as to resist the excess of motion which they are capable of acquiring in consequence of their mass. For a further account of this instrument, illustrated by figures, the manner of using it, and its application to the results of tables of specific gravity, we refer to Nicholson's *Journal*, vol. i.

HYDROMETRA, in *Medicine*, from *ὕδωρ*, water, and *μέτρα*, metra, the womb, signifies a dropsy of the womb.

If such a disease as dropsy of the womb, or a collection

of water in its cavity, independent of pregnancy, ever occurs, it is at least a very rare disease, and its symptoms are not easily detected. Dr. Cullen, however, has given such a disease a place in his system of nosology, although he has made no mention of it in his First Lines. (Nosol. Method. Gen. lxxx.) Boerhaave mentions it in his 1224th aphorism; but the commentary of Van Swieten seems to relate principally to larger collections than usual of the fluids in the gravid uterus. Sauvages speaks of a simple dropsy of the cavity of the uterus on the authority of Astruc (Hydrometra ascitica, sp. 1.), and includes the ovarian dropsy under the same genus, as well as the formation of hydatids in the uterus (H. hydatica), which, however, is altogether distinct from the true dropsy. (Nosol. Method. Cl. x. Gen. 13.) See DROPSY and HYDATID.

HYDROMETRIA, HYDROMETRY, the mensuration of water, and other fluid bodies, their gravity, force, velocity, quantity, &c.

Hydrometria includes both hydrostatics and hydraulics.

The term is modern, but very little in use. The first instance where we meet with it, is in the year 1694, when a new chair, or professorship of hydrometry was founded in the university of Bologna, in favour of S. Guglielmini, who had carried the doctrine of running waters, with respect to rivers, canals, dykes, bridges, &c. to an unusual length.

HYDROMPHALON, in Surgery, a dropical swelling of the navel. The word is compounded of ὑδωρ, water, and ομφαλον, the navel. See DROPSY.

HYDROMYSTES, or HYDROMISTA, compounded of ὑδωρ, water, and μυστηρ, a person set apart for the offices of religion, a name anciently given to certain officers in the Greek church, whose business was to make the holy water, and sprinkle it on the people.

HYDROPARASTATÆ, or HYDROPARASTÆ, formed of ὑδωρ, water, and παρισταται, I present, in Ecclesiastical History, a sect of heretics, the followers of Tatian; called also Encratitæ, Apotactitæ, Saccophori, Severiani, and Aquarians.

The hydroparastatæ were a branch of Manichees, whose distinguishing tenet was, that water should be used in the eucharist instead of wine.

HYDROPELTIS, in Botany, from ὑδωρ, water, and πηληρ, a shield, as being an aquatic plant with peltate leaves. Michaux. Boreal.-Amer. v. 1. 323. Sims in Curt. Mag. 1147.—Class and order, Polyandria Polygynia. Nat. Ord. Multiflora, Linn. Ranunculaceæ, Juss.

Gen. Ch. Cal. none. Cor. Petals six, oblong, permanent, somewhat spreading; the three outermost shortest, and externally resembling a calyx. Stam. Filaments numerous, about 36, inserted into the receptacle, thread-shaped, much shorter than the corolla; anthers vertical, erect, oblong, obtuse. Pist. Germens several, about 12 or 16, superior, erect, oblong, acute, each sessile on a mammillary point of the receptacle; styles short, thread-shaped, incurved; stigmas obtuse. Peric. Capsules several, inclosed in the permanent corolla which exceeds them in length, erect, oblong-ovate, pointed, somewhat fleshy, of one cell, not burling. Seeds one or two, somewhat globose, inserted at the suture on the inner edge of the capsule.

Ess. Ch. Calyx none. Petals six, permanent; three of them external and shortest. Nectaries none. Capsules several, superior, with one cell and two seeds.

Obs. The seed is described by Mr. König as monocotyledonous, if so it cannot belong to the Ranunculaceæ. Aquatic plants in general require reconsideration in this respect, some of them, as we have observed, having been judged monocotyledonous by analogy only, and few properly investigated. The late Dr. Solander had made a

genus of this plant which he referred to the Linnæan natural order of Multiflora, and called *Ixodia*, from ἰξωδης, viscid, very aptly alluding to the extremely viscid coating of the young shoots and buds, which is insoluble in water; but the name given by Michaux being printed, and liable to no exception, is properly retained by Dr. Sims.

The only known species is

1. *H. purpurea*. Michaux. Boreal.-Amer. v. 1. 324. t. 29. Curt. Mag. t. 1147.—Native of lakes and still pools in North America, from Upper Canada to South Carolina. It was communicated to Dr. Sims from the late collection of E. J. Woodford, esq. at Springwell, Herts. The stems are long, floating, round, and leafy. Leaves alternate, stalked, floating, orbicular, entire, peltate, with many veins radiating from their centre, and branched towards the margin. Flower-stalks from the side of the leaf-stalks, simple, single-flowered. Flowers dull purple, closing and lying down on the surface of the water at night, and expanding again in the morning, like those of *Nymphaea alba*, as observed by Mr. S. Edwards while making his drawing for the Botanical Magazine.

HYDROPHACE. See LEMNA.

HYDROPHANES, in Mineralogy, some varieties of opal which appear to have lost the water which they naturally contain, from exposure to the air, and in consequence of this have become opaque, recover their transparency when immersed in water; these have been named hydrophanes. See OPAL.

HYDROPHILUS, in Entomology, a genus of the aquatic kind of coleoptera, nearly allied in appearance and manners of life to the dytisci; its generic distinction consists in having the antennæ clavated, and the club perfoliated; the feelers four and filiform; and the posterior legs formed for swimming, with the inner edge in general ciliated and armed with small claws.

Linnæus has not very accurately discriminated the difference between the dytisci and the hydrophili, both which he confounds under the comprehensive term dytiscus, excepting only that he divides this genus into two sections, one having clavated and perfoliated antennæ (as in hydrophilus) and the other antennæ of a setaceous structure. His generic character is consequently adapted to include both those sections, and is for this reason rather curiously, and somewhat too loosely defined; the antennæ of the dytiscus, says Linnæus, are either setaceous, or increase in size towards the end, and have a perfoliated capitulum or head; the hind feet hairy, formed for swimming, and armed with small claws. (Ord. et Gen.) And again in Syst. Nat. "Antennæ setaceæ aut clavato-perfoliatæ; pedes postici villosi, natatorii submutici." In the tenth edition of Syst. Nat. Linnæus however divides the dytisci into three sections instead of two, as **Antennis perfoliatis*, ***Antennis setaceis*, and ****Antennis clavatis*. Ray had long before his time called this tribe of water beetles by the significant term of hydrocanthus.

The dytiscus genus, as established by Linnæus, is separated by Geoffroy into two genera, dytiscus and hydrophilus, the latter of which, according to this author, contains those with perfoliated antennæ (which he observes are shorter than the feelers); the rest, having the antennæ filiform, (and longer than the head,) he retains under the name assigned to them by Linnæus. Schæffer admits the two last-mentioned genera with some amendment; the tarsi of the dytiscus, he remarks, have five joints, the body oblong, and the head obtuse. The mouth of the hydrophilus, according to this author, is armed with jaws, and has four palpi or feelers, two of which are longer and two shorter than the antennæ.

HYDROPHILUS.

In the Gmelinian edition of "Systema Naturæ," the two genera hydrophilus and dytiscus are adopted nearly in the manner of the writers last-mentioned, except that, according to Fabricius, he adds that the hydrophili have only four feelers, the dytisci six. Lamarck again observes of the "hydrophile" (hydrophilus), that the antennæ are short, with a perfoliated club; feelers four and unequal, the anterior ones longer than the antennæ. The "dytique," (dytiscus,) he adds, has filiform-fetaceous antennæ of the same length as the corselet (thorax); six unequal feelers; and simple jaws ciliated within. The body in both, he says, is elliptic; in hydrophilus the sternum is spinous; and the four posterior legs formed for swimming, in dytiscus only the two behind. Mr. Marsham notices the trifid structure of the antennæ in the hydrophili, the inferted position of the head, the oval convex form of the body, and the ciliations observable on the posterior legs in most species, "Antennæ clava perfoliata, trifida, palpis breviores; caput infertum; thorax transversus; corpus ovale, convexum; pedes postici in plerisque ciliati." Ent. Brit. And these he divides into two families, the one having the thorax smooth, the other longitudinally rugose.

The hydrophili either as a genus (hydrophile), or a family (hydrophiliens), containing several distinct genera, appear to have been long since admitted among the French writers. Walcknær, in his "Faune Parisienne," has the genera spercheus (from Fabricius) and also hydrachna, in addition to hydrophilus and dytiscus, all which belong, according to most other writers, to one of the two genera last-mentioned. In describing the hydrophilus, he notices the cleft on the jaw, and the texture as well as form of the lip, in addition to the characters assigned to it by others. "Palpes, quatre alongés filiformes. Machiøre bifide. Lèvre cornée, légèrement échancrée. Languette légèrement échancrée. Antenne en massue perfoliée." The family hydrophiliens, as a sub-division of the "Sphéridiotes," is described at some length by Olivier; from which they have been lastly removed by Latreille, and now constitute the fourteenth family of the "Pentameres."

Latreille divides the hydrophiliens into two sections, one of which has the jaws entire at their extremity, the maxillary feelers rather shorter than the antennæ, the body oblong and nearly plain above, and the breadth of the thorax never much exceeding its length. This section contains the two genera elophorus and hydræna (the hydræna of Illiger.) The insects of the second section are known by having the jaws bidentated at their extremity; the maxillary feelers also as long, or longer than the antennæ; the body hemispherical, or ovoid and convex; and the thorax transverse. This last contains likewise two genera, as spercheus and hydrophilus. The genus elophorus is distinguished by clavated antennæ, the club of which commences at the sixth joint; and the feelers terminate in a large oval joint. The club of the antennæ in hydræna begins at the third articulation; and the feelers end in a joint much smaller or thinner than that of the preceding. In spercheus the antennæ consist of six joints, and the limbs are destitute of conspicuous spines, or spurs. And lastly, that genus, to which the name of hydrophilus is retained, includes those only which have nine joints in the antennæ, and the limbs terminated in a kind of spurs or spines. The greater number, if not the whole, of those, appear to be hydrophili of continental writers in other parts of Europe.

Like the dytisci the hydrophili inhabit ponds of stagnant waters, residing in the aquatic element during the day-time, and venturing abroad on the wing in the night season, at

which period they become the prey of the owl, the goat-sucker, and other nocturnal birds. The males are distinguished from the females by having a horny flap or shield of a concave form on the anterior legs. The posterior legs are adapted in an admirable and peculiar manner to its mode of life, being long, curved, and flattish, and furnished on the inner side with a series of close-set filaments, resembling a fin, by means of which it is enabled to swim, and perform its various evolutions in the water with the utmost ease and velocity. The larvæ, as in the dytisci, are hexapodal creatures which live in the waters and prey upon insects, the fry of fishes, and other inhabitants of its aquatic regions. It is supposed to live between two and three years in the state of larva before it assumes the pupa form, previous to which latter change it buries itself in some bank of earth or sand contiguous to the boundaries of its usual haunts, and remains, while in the state of pupa, inclosed within a covering of its own formation, the shape of which is usually oval or spherical. The opinion of Degeer that the hydrophili, in the last or winged state, are carnivorous, seems to be in some degree refuted by the more recent observations of naturalists, the result of which appears to be that they subsist chiefly, if not entirely, on vegetable food; and we may further add that their internal conformation pretty clearly proves the truth of this interesting discovery.

Species.

PICEUS. Black and smooth; sternum furrowed, with a long spine pointing backwards. Fabr. Donov. Brit. Inf. &c. *Hydrophilus ruficornis*, Degeer. *Le grand hydrophile*, Geoff. *Dytiscus piceus*, Linn.

Native of Europe.

OLIVACEUS. Olive, sternum grooved with a long recurved spine; wing-cafes emarginate. Fabr.

Inhabits Coromandel, and less than the former.

CARABOIDES. Black and polished, the wing-cafes somewhat striated. Fabr. Donov. Brit. Inf. *Hydrophilus nigricornis*, Degeer. *Hydrocantharus niger subrotundus*, Ray.

An European species.

LATERALIS. Black and glossy; margin of the thorax and wing-cafes yellow. Fabr.

Half the size of the former, the sternum projecting backwards into a sharp point, with a yellow dot in the middle, and the legs ferruginous. Inhabits South America.

RUFIPES. Shining black; legs rufous; sternum with a recurved spine. Fabr.

Size of the last, and inhabits China. The antennæ are ferruginous, with the club brown; the body glabrous, and without spots.

EMARGINATUS. Dusky-brown; shield emarginate. Fabr. &c.

Found on aquatic plants in Europe. Body gibbous and opaque.

FUSCIPES. Black; wing-cafes striated with dots; margin livid; legs fuscous. Marsh. Ent. Brit. *Dytiscus fuscipes*, Linn. Fn. Succ. *Dytiscus gyrioides*, Sehrank. *L'Hydrophile noir strié*, Geoff.

An European species.

SCARABÆOIDES. Oval, convex, black, and very smooth; wing-cafes striated; legs pitchy. *Dytiscus scarabæoides*, Linn. Syst. Nat. X. Roefel. &c.

Native of waters in Europe.

PICIPES. Black; legs pitchy; wing-cafes smooth. Fabr.

Inhabits Germany.

ORBICULARIS. Subrotund; body glabrous and black; Fabr. *L'Hydrophile lisse à points*, Geoff.

HYDROPHILUS.

Same country as the preceding; and is likewise found in France and other parts of Europe.

SUBROTUNDUS. Roundish, glabrous and black; wing-cafes striated. Fabr.

Smaller than the last, and inhabits America.

BICOLOR. Ovate; above yellowish, beneath black. Fabr. &c.

Native of Denmark.

COLLARIS. Black; mouth, thorax at the sides, and a few abbreviated lines on the wing-cafes ferruginous. Fabr.

Inhabits South America.

UNDATUS. Ovate, black; thorax pale; wing-cafes striated grey. Fabr.

The head of this species is glossy black; antennæ and feelers yellow; thorax with a double black dorsal line; wing-cafes obscurely undulated with black; body black, and legs yellow. This insect inhabits South America.

OBSCURUS. Glossy black; wing-cafes striated and ferruginous at the base and tip. Fabr.

Native of Germany; the head and thorax smooth and without spots; legs somewhat ferruginous. Obs. This must not be confounded with *Hydrophilus obscurus* of Müller (Zool. Dan.), which is described of a livid colour, with the abdomen black, and the wing-cafes glossy with crowded spots. This last mentioned insect is perhaps a variety of the following species.

LURIDUS. Thorax and striated wing-cafes brown-cinereous; body black. Gmel. Degeer, &c.

Inhabits Europe.

ERYTHROCEPHALA. Ovate, black; head, thorax, and border of the wing-cafes rufous. Fabr.

Country unknown. The legs rufous, thighs black.

HEMORRHOIDALIS. Black; wing-cafes striated, the tip with the shanks ferruginous. Fabr. &c.

Inhabits Germany.

MARGINELLUS. Glossy black; thorax and wing-cafes edged with rufous. Fabr.

Size of the last, and inhabits the same country; the wing-cafes smooth; legs black; tarsi ferruginous.

SORDIDUS. Black, and somewhat glossy; margin of the thorax livid; wing-cafes livid, with black spots. Marsh.

Inhabits Britain in stagnant waters.

VERRUCOSUS. Dull black, ferruginous; abdomen beneath verrucose. Marsh.

Legs and abdomen black; tubercles beneath resembling those on some species of the Lichen genus. Native of Britain.

LIVIDUS. Ovate, livid, and very smooth. Oliv. *Dytiscus lividus*, Forster. *Hydrophilus lividus*, Marsh.

Antennæ testaceous at the base; legs black, the shanks and tarsi testaceous ferruginous. Found in maritime marshes in Europe.

DERMESTOIDES. Hemispherical-ovate, and lurid; head black; thorax at the sides dull ferruginous. Marsh. *Dytiscus dermestoides*, Forster.

Inhabits stagnant waters; the head black and glossy; thorax black except the margins; legs ferruginous.

TORQUATUS. Ovate testaceous; head behind black. Marsh.

The head is yellow; abdomen black; legs pitchy black. A British species.

MINUTUS. Ovate and black; wing-cafes and legs grey. Fabr. &c.

Head pitchy, black and glossy; thorax at the sides pale; abdomen beneath pitchy black. Native of Europe.

GRISEUS. Above cinereous, beneath fuscous. Fabr.

Size of the last, and inhabits Europe.

BIPUNCTATUS. Thorax black, edged with grey; wing-cafes brown with a whitish margin and dot behind. Fabr. *Hydrophilus coccinelloides*, Hellw. *Dytiscus coccinelloides*, Schrank.

A small species found in Europe.

LUTOSUS. Fuscous; wing-cafes striated with impressed dots. Marsh.

A small species; the thorax is rugose, with transverse flexuous raised lines. Native of Britain.

NITIDUS. Black and polished; margin of the thorax with the legs rufous. Marsh.

Inhabits Britain.

MOLLIS. Black and glossy; thorax and wing-cafes brown, testaceous. Marsh.

Head and abdomen black. A small species found in Britain.

PICINUS. Ovate, pitchy, and glossy; legs rufous. Marsh. Size of the last, and inhabits Britain.

LONGIPALPIS. Black; feelers antenniform; antennæ and feet red. Marsh.

Length rather more than one line; the feelers advanced and three-jointed, the first articulation long as in the antennæ of some curculionides; head black; thorax black and attenuated behind, line in front transverse and impressed; wing-cafes black and striated with dots. A British species.

IMPRESSUS. Black; thorax with a large impressed dot on each side; legs testaceous. Marsh.

Body entirely black; wing-cafes striated. Inhabits Britain.

FULVUS. Fulvous; wing-cafes lineated with dull black; abdomen black. Marsh. *L'Hydrophile fawæ*, Geoff.

Antennæ fuscous; feelers testaceous, with the tip black; head fulvous and dotted; eyes black; thorax fulvous and dotted, the front black; wing-cafes fulvous with longitudinal obsolete lines of black; abdomen beneath black, covered with fine hairs; legs testaceous and downy. Native of Europe.

MARGINALLENUS. Pitchy and entirely glossy; margin of the thorax pale. Marsh.

A British species.

OCHROPTERUS. Black; sides of the thorax and wing-cafes, with a spot before each eye, lurid. Marsh.

Length two lines; the head black, except the two lurid spots before the eyes; thorax and wing-cafes very finely dotted; tarsi ferruginous. Native of Britain.

AFFINIS. Cinereous; wing-cafes each with two black dots, and striated with punctures; thorax emarginate, brassy-green. Marsh. *Hydrophilus griseus?* Herbit.

Inhabits stagnant waters in Europe.

DORSALIS. Fuscous; thorax green; wing-cafes striated, testaceous with a common black spot, inclosing two testaceous ones. Marsh.

Native of Britain.

CINCINDELOIDES. Black brassy; eyes prominent; wing-cafes with ridged striæ. Marsh.

Body entirely black and brassy; head advanced; thorax with three hollows; wing-cafes with two lines of impressed dots between the ridges.

A British species.

PYGMÆUS. Grey; head black behind; thorax yellowish. Fabr.

A minute kind found in South America; the wing-cafes without spots.

TRICOLOR. Black; wing-cafes pitchy edged with black, and ochraceous at the tip; legs tawny. Herbit.

Inhabits Prussia.

CORDIGER. Black; wing-cafes and margin of the thorax ferruginous,

ferruginous; the first with a common heart-shaped spot. Herbit.

Inhabits same country as the former.

PUSILLUS. Black; wing-veins very smooth; antennæ and tarsi brown. Müll.

Native of Denmark.

PILULA. Black; above polished with crowded dots. Müll. *Hydrophilus punctatus*, Geoffr.

An European species; as are also the two following.

NIGER. Glossy black; wing-veins finely striated with distant dots; antennæ and tips of the legs ferruginous. Linn.

ATER. Black and glabrous; antennæ and flanks reddish. Linn.

HYDROPHOBIA, in *Medicine*, from ὑδρῶς, *water*, and φοβία, *I fear*, signifying, literally, a *dread of water*, is the term employed by medical writers to denote the disease occasioned by the bite of a rabid animal; an aversion to liquids being one of the characteristic symptoms of that disease. Some have used the more general term *hydrophobia*, from ὑγρον, *liquid*.

Of the impropriety of these appellations, deduced from one symptom only, and that neither exclusively belonging to the disease, nor invariably present in it, we shall have occasion to speak presently. In the mean time, we may observe, that the older writers, as we are informed by Cælius Aurelianus (*Acutor. Morb. lib. iii. cap. 9. and 12.*) used the terms *ærotophobia*, or a *dread of air*; and *pantophobia*, or a *fear of all things*, as appropriate names for the disease, since the impression of cold air sometimes excited terror, and the disorder is marked by a singular degree of general timidity and distrust. Others called it *phobodipsion* (δῖψος, signifying *thirst*), because the patient is *thirsty*, yet *fears to drink*. Several modern authors, however, objecting to an appellation expressive only of one symptom, have more correctly denominated the disease *rabies*, and *rabies canina*, or canine madness. The French call it *la rage*.

It is uncertain at what period this disease became known. Its symptoms are never mentioned by Hippocrates, which affords a strong presumption that it did not exist in his time; for it is a disease so singular and striking in its appearances, that it could never be seen by any one without leaving the deepest impression upon the mind. Aristotle is the first writer who expressly mentions it. He says that all animals, except man, are infected by the bite of a mad dog, and destroyed by it. This imperfect state of his knowledge respecting the malady, is a proof that it was a matter of recent observation; for although several persons might be bitten without suffering the disease, and, from the length of time which commonly elapses between the infliction of the bite and the appearance of the symptoms, several cases might occur before it was referred to its true source; yet no very long time would be requisite to clear up these doubtful points. Accordingly, we find subsequent writers treating of the disease in a familiar manner. Plutarch affirms that the hydrophobia was first seen at Rome in the days of Asclepiades. See Aristot. *Hist. Anim. lib. viii. cap. 22.* Plutarch, *Sympoſiacion, lib. viii. probl. 9.* Le Clerc. *Hist. de la Médecine, p. ii.*

The origin of the poison, by which hydrophobia is generally communicated, is likewise a subject of much uncertainty. It is known that animals of the dog-kind, including the wolf and the fox, are most frequently the subjects of *rabies*; and some writers have maintained that, although it may be received and propagated by other animals, yet it always originates with some of the canine race. (See Hillary on *Dis. of Barbadoes, p. 246.*) But it is still a matter of

doubt, whether it occasionally arises spontaneously in these animals; or whether, like the small-pox in the human species, it is propagated only by contagion. There are some facts, which, though they do not prove the negative, in respect to the spontaneous origin, yet afford sufficient evidence that the disorder, even among dogs, is most commonly the result of infection. Great heat has been said to excite *rabies* in the dog-tribe. But if that were the case, it ought to be, as it were, endemic in tropical countries. Dogs are more numerous, Dr. J. Hunter has affirmed, in the island of Jamaica than perhaps in any other part of the world. It is the ambition of every negro to be master of a dog; "yet notwithstanding their great numbers, particularly in the towns, forty years have elapsed without a dog being known to go mad. The insular situation of the country secures to it in some degree the advantages of a quarantine; and the rare occurrence of the disease proves that it seldom, if at any time, originates of itself. (See *Trans. of a Society for the Improvement of Med. and Chirurg. Knowledge, v. i. art. 17.*) It is also stated, that the most eminent sportsman in this country, Mr. Meynell, to whom the preservation of his kennel from madness was an object of great importance, preserved his dogs from the disease, during a long series of years, by making every new hound perform a quarantine before he was allowed to join the pack. *Ibid.*

There is reason to believe, however, that the *rabies*, in the animal race, occurs at times spontaneously; but whether from the causes which have been stated by authors it were not easy to decide. Among these causes, Boerhaave enumerated "a very hot climate, or one exposed to the extremes of heat and cold; a very hot and dry season; feeding upon putrid, stinking, and maggoty flesh; want of water; worms bred in the kidneys, intestines, brain, or cavities of the nose (*Aphorism 1134.*); but the influence of these circumstances in producing the disease is not established by a sufficient number of observations.

All domestic animals, birds as well as beasts, are susceptible of the poison of the rabid dog. Indeed our experience has not yet taught us that there is any race of animals exempted from its effects. But whether every animal labouring under the disease is capable of infecting others, or whether this power is confined to a few only, we are yet to learn. Boerhaave affirms that the disease has been communicated by infection to others by dogs, cats, wolves, foxes, horses, asses, mules, swine, apes, cocks of the poultry breed, and men, when affected with *rabies* (*Aph. 1132.*); and the cow has also been said to propagate it. Van Swieten has stated some instances, from old authors, of hydrophobia occasioned by the beak of an enraged cock wounding the hand and arm. But there is little doubt that, in such cases, the spasmodic and fatal disease, which ensued, was *tetanus*, and not hydrophobia. (See *TETANUS.*) This notion is confirmed by the early occurrence of the symptoms after the bite, namely, within the first or second day, which is not unusual in *tetanic* affections, but never perhaps occurs in hydrophobia. (See Van Swieten's *Comment. on Aph. 1132.* Also, Hamilton on *Hydrophobia, vol. i. p. 107, 2d edit.*) It is certain, however, that not only animals of the canine species, but cats, have produced hydrophobia in the human species by their bite. Were we to judge from analogy, from seeing two animals, so different from each other as the dog and the cat, capable of infecting others, we might be led to infer, that every animal susceptible of the disease had the power of communicating it, provided their natural habits led them to bite and tear with their teeth such animals as came in their way, while in an enraged state. With respect to men, under the influence of hydrophobia, although

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though the popular notion of their general disposition to bite those around them is erroneous, yet there are instances on record in which hydrophobic patients did bite some of their attendants, but no ill consequences have been known to follow. From this, however, as Dr. John Hunter justly remarks, we can draw no positive inference; for it is but a small proportion of such persons as are bit by dogs undoubtedly mad, who are infected with the poison. *Transf. of a Society, &c.* p. 300.

With regard to the activity of the poison of the rabid dog, the facts which have been collected have been as vaguely stated, and the inferences, therefore, are as inconclusive as those relative to the topics just mentioned. Among the older writers, indeed, there was much credulity, and they have transmitted to us many fabulous histories in regard to the operation of the rabid virus. "Scarce any poison known," says Hillary, (relying upon the truth of those tales,) "is so infectious, or so easily and readily communicated by so many and various ways as this of a mad dog is; for the slightest bite, only tearing the skin, without drawing blood; or the smallest quantity of the flaver of the mad animal, either fresh or dried for some time, taken upon the tongue or lips; or rending a person's clothes and leaving the flaver on them to dry, has produced this disease; as a woman had her coat torn by a mad dog, which she a considerable time after sewed up, and bit off the thread with her teeth, and some time after died rabid from biting off that thread. (Hildanus *Obf. Chir.*) Also a man only kissing his children to take his leave of them when he had the rabies upon him, they all soon after died rabid. (Palmarius *de Morb. Contag.*) Kissing a favourite dog that was mad had the same effect, &c. has produced this most fatal disease." (On Diseases of Barbadoes, p. 249. See several similar cases quoted by Dr. Hamilton, vol. i. p. 98—104.) Hillary admits, however, that the poison does not appear to infect a person through the unbroken skin: and there is certainly a defect of accurate detail, in the cases quoted by Dr. Hamilton, where the infection was said to have been communicated when no bite was inflicted. Some excoriation or rupture of the cuticle may have existed, although unnoticed, in the hands of those who examined the mouths of dogs in this malady. (See Hamilton, case iii. p. 100, case ix. p. 103.) Where the disease was produced by a rabid dog, licking a fore until it bled, we understand how the infection would be occasioned by absorption. See Dr. Hunter, in *Transf.* before quoted, p. 301.

As the bite only serves the purpose of *inoculation*, the danger arising from it will be various, as it happens to be inflicted in a part more or less vascular; or as the teeth are more or less loaded with the poison. There is the greatest danger from bites in the face, and the symptoms come on soonest; bites in the hands also, which are generally bare, are full of danger. In other parts of the body, the clothing, by wiping the teeth of the animal, greatly lessens the danger of infection. It is fortunate that the human species is much less susceptible of the infection than the dog. Four men and twelve dogs were bit by the same rabid dog, and every one of the dogs died rabid, while all the four men escaped, though they used no other means of prevention but such as we see every day to fail. There is also an instance of twenty persons being bit by the same mad dog, of whom only one had the disease. (See Dr. Hunter's paper, p. 302.) Some writers have calculated, indeed, that, on an average, only *one* person in *twenty-five*, who are bitten by rabid dogs, suffer hydrophobia. Dr. Hamilton, however, on collating a great number of instances of bites received, found that the average did not amount so high: he

thinks that not more than *one* in *sixteen* of the human species, who are bitten, take the disease. *Loc. cit.* vol. i. p. 31.

Some experiments, made by Mr. Cline, respecting the communication of rabies by inoculation with the saliva of a hydrophobic man, in the last stage of the disease, would throw great doubt on the infectious qualities of that secretion in the human subject. He took particular pains in inserting the saliva, while perfectly fresh, into a dog, three rabbits, and several fowls: "but in none of these instances was there the least appearance of the disorder at the expiration of three months."—Mr. Astley Cooper, on the other hand, inoculated a dog, a pig, a fowl, and a rabbit, with the saliva of a dog, which had recently died of rabies, by inserting, from the point of a lancet, between two and three drops under the skin of the inner part of the thigh of each." The dog and fowl were kept confined for nine weeks, and the pig seven, but without any appearances of hydrophobia. The dog afterwards became the property of a gentleman, who kept him nearly twelve months, and he had never any marks of the disease. The rabbit was accidentally killed on the fourth day from the experiment." See two cases of Rabies Canina, by Dr. Babington, &c in the *Medical Records and Researches*, Lond. 1798, p. 136—8.

On the whole, therefore, the evidence is of an unsatisfactory and even contradictory nature, in respect to the qualities and operation of the *virus* of rabies; and much remains to be ascertained by future experiment and investigation. We know, however, too well, that the fatal consequences of the poison have appeared, in some instances, in which every practice had been adopted, after the infliction of the bite, to remove the bitten part, as well as every portion of the poison that could be supposed to lodge in the wound.

We should now have proceeded to describe the symptoms of the disease, as it affects the dog, in order that it might be speedily recognised, and distinguished from other diseases, to which that animal is subject: but this has been already so fully and distinctly done, by a writer possessed of an extraordinary degree of experience upon the subject, that we must refer our readers to his description (see the article Dog); and proceed to give an account of the symptoms of the disease, as it occurs in the human subject. We may just remark, by the way, that the influence of *names*, in respect also to the disease in the dog, has led to some dangerous popular mistakes, which are pointed out in the article just referred to. The term *hydrophobia*, being erroneously applied to the rabies of the dog, has induced a supposition that no dog is rabid, while he continues to drink; whereas he is constantly endeavouring to quench his thirst in that disease. And again, the appellation of *madness* has led to a belief that violence and fury are characteristic of rabies in the dog; but, though he is irritable and peevish, there is nothing of wildness in his disposition. In consequence of this mistake, dogs have been allowed to go about, fondled, and even slept with (see *Mem. of Swedish Acad.* 1777) in a rabid state.

History of Symptoms.—The wound inflicted by the bite of a rabid animal has nothing peculiar in its appearance, and heals as readily as the bite of an animal that is not rabid. From the time of the bite until the period when the symptoms appear, there is no derangement of health, nor any perceptible change in the constitution, provided the person bitten be not under the influence of fear. The interval between the infection and the commencement of the disease varies considerably in different instances: the most common period, as it was long ago stated by Cælius Aurelianus, appears to be about forty days or six weeks. Dr. Mead states
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the ordinary interval at between thirty and forty days: (Mead on Poisons, p. 130.) and Dr. Babington from three to five weeks; some instances occurring much earlier, and others not for many months, so that he considers the average from four to twelve weeks. (Med. Records and Researches, before quoted.) In the cases laid before the Society for the Improvement of Medical and Chirurgical Knowledge, the interval varied from thirty-one days to seventeen months. Dr. Hamilton draws the following conclusions, as to the interval between the bite and the occurrence of the disease, from a table of 131 cases. Only three took the disease before the 18th day, none before the 11th—from the 18th to the 30th, *seventeen* were seized:—*sixty-three* began to be ill from 30 to 59 days after the bite;—*twenty-three* were attacked from two to three months inclusive;—*nine* from three to four months;—*two* at five months;—*one* at five months and eleven days;—*one* at six months;—*one* at seven months;—*two* at eight months;—*one* between eight and nine months;—*two* at nine months;—*one* at eleven months;—*one* at fourteen months;—*two* at eighteen months;—and *one* at nineteen months. (Vol. i. p. 113.) The last-mentioned interval is, he thinks, the longest to which any credit can be given. On the other hand, a case is related by Dr. Bardley of Manchester, which proved fatal, as is usual; and every inquiry respecting which corroborated the patient's repeated assertion, "that he had never suffered the least injury from any animal, except the bite, inflicted *twelve years since*, by an apparent mad dog." (See Memoirs of the Liter. and Philos. Society of Manchester, vol. iv. part ii. p. 431.) In this instance, the nature of the disease was perfectly clear, and the evidence as to the bite not less satisfactory: so that we must either admit the latent state of the poison for this long interval, or the *spontaneous* origin of hydrophobia in man. Dr. Bardley's paper, which contains a reference to numerous cases, in which the latent period of the poison was long, is worthy of perusal. But to proceed.

At an uncertain time after the infliction of the bite, the patient feels some degree of pain or uneasy sensation in the bitten part, which is sometimes compared to a scorching by heat, is sometimes attended with itching, and sometimes supposed to be rheumatic. This pain, when the bite, as is most frequent, is in the hand, spreads up the outside of the arm to the shoulder, (not affecting the axilla,) and the neck. In some cases the cicatrix left by the bite is said to become inflamed, and even to discharge. These pains are soon succeeded by a general depression of spirits, and especially a sense of undefinable listlessness and anxiety. Sometimes a general rigor or chill occurs, as in the commencement of a fever. The night is passed in the same restless state, without sleep. The appetite begins to fail, and some thirst is present. And now the peculiar symptom which gives the disease its name, the *dread of liquids*, is discovered, often accidentally, on attempting to take drink; as the liquid approaches the lips, a sudden convulsive sob, or catch in the breath, with a momentary sensation of choking, takes place, which is renewed at every attempt. As the disease advances, this attempt is not thought of without horror, and the very idea excites these spasmodic fits of choking in the throat, and catching of the breath. This may be best illustrated by examples. "On our proposing to him to drink," says Dr. Marcet, speaking of a hydrophobic patient, "he started up, and recovered his breath by a deep convulsive inspiration; yet he expressed much regret that he could not drink, as he conceived it would give him great relief, his mouth being extremely parched and clammy. On being urged to try, however, he took up a cup of water

in one hand and a tea-spoon in the other. The thought of drinking out of the cup appeared to him intolerable; but he seemed determined to drink with the spoon. With an expression of terror, yet with great resolution, he filled the spoon, and proceeded to carry it to his lips: but before it reached his mouth, his courage forsook him, and he was forced to desist. He repeatedly renewed the attempt, but with no more success. His arm became rigid and immovable, whenever he tried to raise it towards his mouth, and he struggled in vain against this spasmodic resistance. At last shutting his eyes, and with a kind of convulsive effort, he suddenly threw into his mouth a few drops of the fluid, which he actually swallowed. But at the same instant he jumped up from his chair, and flew to the end of the room, panting for breath, and in a state of indescribable terror." (See Medico-chirurgical Transactions, vol. i. p. 138. Lond. 1809.) A patient of Dr. Bardley's, having eaten some bread and butter, with great difficulty, was requested to wash down this solid food with some liquid; and he expressed a readiness to make the trial. "On receiving a basin of butter-milk, he hastily applied it, with a determined countenance, to his lips;—when he was instantly seized with so severe a spasm and rigidity of the muscles of the neck, that he was compelled, in an agony, to desist from drinking. Shortly after, he raised himself upon his knees in bed, took the bowl again into his hands, and by forcibly stretching his neck forward, at the moment he received the liquid into his mouth, and then violently throwing his head backwards, he succeeded in swallowing a small portion. He appeared highly gratified by the success of this effort, and the fortitude he had exhibited; and exultingly demanded another draught of the butter-milk, as he now thought he could conquer the difficulty he had hitherto experienced. But a violent return of the spasms in the throat and neck checked this attempt. These convulsions were terminated by the stomach discharging the liquid previously swallowed, highly tinged with bile." (Memoirs of Manchester Society, vol. iv. p. 439.) In a word, it is obvious to the bystander, that every attempt to pass liquid over the root of the tongue excites convulsions in the larynx and pharynx, and even in the muscles of the chest and abdomen; and therefore this symptom, the *hydrophobia*, as Dr. Mead and others have remarked, is not a delirious dread, or hallucination of the mind, but a matter of experience, which at first excites the surprise of the patient. Mead affirms that it should have been called, not *hydrophobia*, but *δυσκαταποσις*, *dyscataposis*, or difficulty in swallowing. (See his Mechanical Account of Poisons, p. 146, 3d edit.)

But the dread of swallowing liquids, although the most singular symptom of the disease, and the origin of its name, constitutes but a small part of this distressing malady. It is only one among many other effects of the poison upon the nervous system at large. The state of disease into which the nervous system is thrown, is evinced by the extreme irritability of the whole frame, mind and body, and the excessive susceptibility to all impressions; hence the constant watching and inquietude; and the sudden fits of anger and impatience, arising from the most trifling causes, as the patient himself readily allows, and even wonders at, and apologizes for, in the succeeding moments of composure. Hence also the distress, and even the recurrence of his spasms, occasioned often by the slightest motion of the air, as from opening the door, from the approach of any person, or even of a person's hand, in front of him; from hearing water poured from one vessel to another; or even by the buzzing of a fly. This morbid excitability of the nervous system, is farther manifested in the extreme timidity and suspicion of

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the patient, in the imaginary objects of terror and uneasiness which the senses frequently represent to him, and in the occasional delirium and incoherence of ideas, from which, however, he easily collects himself. The circumstances may be illustrated by referring to almost every case on record. Dr. Bardsley, speaking of the patient before mentioned, says, "He was now alarmed to a degree of distraction at being left alone; he examined every object with a timid and suspicious eye; and, upon the least noise of a footstep in the gallery, he begged, in the most piteous accents, to be protected from harm."—"I observed he frequently fixed his eyes, with horror and affright, on some ideal object; and then, with a sudden and violent motion, buried his head underneath the bed-clothes. The last time I saw him repeat this action, I was induced to inquire into the cause of his terror. He eagerly asked if I had not heard howlings and scratchings? On being answered in the negative, he suddenly threw himself upon his knees, extending his arms in a defensive posture, and forcibly throwing back his body and head. The muscles of the face were agitated by various spasmodic contortions;—his eye-balls glared, and seemed ready to start from their sockets; and at that moment, when crying out in an agonizing tone—"Do you not see that black dog?"—his countenance and attitude exhibited the most dreadful picture of complicated horror, distress, and rage, that words can describe, or imagination paint."—"His mental faculties at this period (a short time before death) suffered very little derangement; for although, when not attending to external objects, he would utter some incoherent sentences; yet, the moment he was spoken to, he was perfectly collected, and returned rational answers." (Bardsley, loc. cit.) Dr. Marcet observes, in regard to his patient, on the fifth day of the disease—"He appeared still coherent and distinct in his ideas; but some of his conceptions were considerably disturbed. His sight was not materially impaired, for he could tell what hour it was by looking at the clock: but he often fancied he beheld objects which were not before him. He thought, for instance, that he saw various insects and reptiles crawl about him. 'My sight is queer,' said he, 'I think I see strange animals,' &c. Once or twice he exclaimed with an accent of terror, 'Who is pouring cold water down my head?'—yet no one was near him. He was conscious of his extreme irritability, and often prayed to be kept tranquil. This unfortunate man, in the height of his distress, still apologized for his acts of violence, and declared that he could not conceive what occasioned this extraordinary agitation." *Medico-chirurgical Transac.* vol. i. p. 147.

These statements may convey to the reader some notion of the miserable condition of the sufferer, afflicted by this malady, and of its peculiar and characteristic symptoms; the impression of which cannot be easily effaced from the recollection of those who have witnessed them. There are some other circumstances belonging to the disease, of less note, which remain to be mentioned. One of these is a constant collection of a thick, ropy, and tenacious saliva in the fauces, which is often productive of extreme distress; for as the miserable sufferer is unable to make the smallest attempt to swallow it, without exciting the convulsive choking, he spits it out incessantly, and with great vehemence and difficulty, often cautioning the bystanders to keep out of the way. "Oh! do something for me;" exclaimed Dr. Marcet's patient, "I would suffer myself to be cut to pieces! I cannot raise the phlegm; it sticks to me like bird-lime." Dr. Wavell's patient, at times, drew the viscid phlegm from his mouth with his fingers, and with inconceivable rapidity and eagerness, threw it against the wall. The

pulse in the beginning is not quick, nor is the skin hot; and there is none of the muscular debility so remarkable in fever: but as the disease proceeds, there is some feverish heat, and the pulse becomes quick, varying, however, exceedingly as slight causes of irritation influence the patient: as death approaches, it usually becomes very quick and tremulous. Sickness and vomiting often occur, when a little phlegm, tinged with brown or yellow bile, is brought up. There is often a sense of great oppression and stricture about the breast, or what has been called anxiety about the præcordia, and which is probably an affection of the heart; for it is accompanied with sighing and deep irregular inspirations, and the patients find some relief from motion, as running and walking, which shew the lungs not to be the seat of the oppression. The countenance is generally sorrowful, and often expressive of a great degree of horror and distress.

There is a considerable variety in the symptoms in different constitutions: even the hydrophobia, or dread of swallowing liquids, occurs in very different degrees. But there is no part of the disease that admits of greater variation than the degree of mental derangement, which in some does not amount to more than extreme irritability and impatience; in others to muttering and incoherent talking, yet giving rational answers when questions are asked; and in a few it rises into short fits of the most violent rage and fury, in which the patients bite and tear themselves and every thing near them. In general they manifest no disposition to mischief; yet popular prejudice is still on the watch for the "barking and biting like a dog," as the disease advances. In the case related by Dr. Marcet, the bystanders confidently expected the symptom of *barking*, which they "thought at last to have clearly discovered in the peculiar noise which he made in breathing." Dr. Wavell, speaking of this sort of respiration, says, "the noise he made in drawing air into his lungs was undoubtedly peculiar; but neither in my opinion, nor in that of any other medical gentlemen who attended him, did it bear the least resemblance to the barking of a dog." (*Med. Records and Researches*, p. 151.) Were this notion of the canine metamorphosis, which the disease has been supposed to effect in man, merely speculative, it would be less important to confute it; but it is to be lamented, that the practical result of it, in the cruel and murderous plan of suffocating the patient, has been followed, both in France and in this country, within the last twenty years of the eighteenth century. See Hamilton on Hydrophobia, vol. ii. p. 140, and App. p. xxviii.

The duration of life, after the commencement of the symptoms of hydrophobia, has been on an average about *four days*; it varies from thirty-six hours to five, or even, though rarely, six days. The termination of life is likewise various in different instances: death is often very sudden, being produced by one of the convulsive attacks, such as occur on the attempts to drink; at other times, more general convulsions carry off the patient; while in other instances, again, the strength sinks suddenly, the patient becomes quiet and calm, and dies with a placid countenance, and without a struggle.

Dissections.—With the hope of acquiring some knowledge of the nature of this disease, and of the organs in which it is principally seated, physicians have ardently pursued the investigation of the changes of structure connected with it, by careful and almost innumerable dissections of those who have died of it. But it is to be lamented that no light whatever has been thrown upon the subject by these ample examinations. For, although in general some morbid changes in the structure of different parts has been discovered, yet these have been found in various organs, in different cases; those

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organs, which appeared to be the principal seat of disease in one instance, being found altogether found in another, and *vice versa*; and the morbid changes observed in general, are by no means adequate to account for the phenomena of the disease.

The most frequent appearances which have presented themselves on dissection, have been marks of slight inflammation in the inner coat of the stomach, near the *cardia* or upper orifice, consisting of red spots or blotches, or merely of an increased number of red vessels, with small streaks of red blood; in many cases a similar inflammatory appearance has been found in the *pharynx*, or upper part of the gullet, sometimes extending along the whole of that passage to the stomach. This state of the throat, *oesophagus*, and stomach, seems to afford an explanation, in some measure, of the pain and difficulty of deglutition, especially of liquids, which require a more active contraction of the passage: but the excessive dread at the attempt, and the convulsions excited by it, can only be ascribed to that peculiar state of irritability of the nervous system, which characterizes the disease. On the other hand, however, cases of hydrophobia have occurred, in which no inflammation in those parts have been found. (See Dr. Babington's in Med. Records, &c. p. 124.) In some cases, a glairy fluid has been found in the stomach in considerable quantities; in others a dark bilious matter has been said to line its cavity. Hamilton, vol. i. p. 232.

Many dissections of persons who had died in a state of rabies are recorded, in which appearances of inflammation and great congestion of the blood-vessels were discovered in other viscera, especially in the brain and its surrounding membranes, and in the lungs. Sometimes not only an increased vascularity of the *pia mater*, the choroid *plexus*, and the brain itself has been found, but also slight watery effusions on the surface of the brain. A state of congestion in the lungs, resembling that which is discovered after a fatal peripneumony, has occurred in many instances to a considerable extent; and the vessels of the diaphragm have also been observed to be unusually turgid. (See Dr. Babington's cases in Med. Communic. and Med. Records, &c.—Mead on Poisons.—Ferriar's Med. Hist. and Reflections, vol. iii.) Dr. Ferriar, indeed, is disposed to attribute much of the disease to this pulmonary derangement. "If future dissections should prove," he says, "that congestion in the lungs generally appears in those who die of rabies, I confess that I should be disposed to consider this disease as dependent on the obstruction of the circulation in that important organ. Accumulation of blood in the head, and compression of the brain, must be the consequence of such an obstruction, rapidly formed. The quick panting respiration, anxiety, and sudden debility, may be referred to the same cause. In fact, we find a similar degree of tremor attendant on the croup, which consists in inflammation of the trachea, and destroys by suffocation. That degree of inflammation in the stomach and *oesophagus*, which produces the difficulty of swallowing liquids, may not only arise from sympathy, but the symptom itself may occur in consequence of the state of the lungs alone." (Loc. cit. p. 34.) But in forming these conjectures, this intelligent physician has overlooked the circumstance, that, however rapidly such congestion may take place, in common peripneumony, no approximation of any of the symptoms to those of hydrophobia is ever seen to occur; and the peculiar affection of the nervous system is surely inexplicable upon any such mechanical grounds.

Some writers have described various derangements of the liver and other abdominal viscera, which dissection has discovered, especially appearances of congestion or slight inflammation: Mead, Hillary, and others, have mentioned a

peculiar dryness of the pericardium, &c. But these changes appear to be accidental, and are more frequently not to be found. So that, on the whole, it would appear, that the nature of the malady is not manifested by any peculiar disorder of structure in any organ of the body, and therefore is beyond the reach of anatomical investigation.

Diagnosis.—From the peculiar nature of the symptoms above detailed, it might be conceived that no difficulty could occur, in distinguishing *rabies canina* from every other disease to which the human body is liable. But this is very far from being the case, as the records of medicine evince. For many histories are related, in which, although the disease was the consequence of a bite, it partook more of the nature of some other malady; and others are detailed, in which no bite had preceded the disease, or had occurred at so distant a period as to render its influence in exciting the disease extremely questionable: not to mention the number of mistakes which have been committed, in consequence of the symptom (*hydrophobia*, or *dread of water*,) being supposed to be the essence, or pathognomonic symptom of the disease.

In many circumstances the *tetanus* bears a considerable resemblance to *rabies*, and has, doubtless, been mistaken for it. (See TETANUS.) This most violent and fatal disease is most frequently occasioned by slight wounds, especially about the hands or other tendinous parts; it seldom appears till after some little time has elapsed, and the wound has healed; it is marked by paroxysms of violent general spasms, beginning in the neck and throat, and accompanied by difficulty of swallowing, or total loss of that power; these spasms are excited by the slightest causes, "for almost every attempt at motion, as attempting a change of posture, *endeavouring to swallow*, and even to speak, sometimes gives occasion to a renewal of the spasms over the whole body." (See Cullen, First Lines, vol. iii. chap. on *Tetanus*); and the disease generally proves fatal by one of these convulsions about the fourth day. In all these circumstances there is much similarity with those of rabies, inasmuch that some practitioners have denied the existence of rabies, as the result of the poison of a rabid animal; and contended that the disease is, in all cases, a tetanus, excited only by the wound which the teeth inflict. Instances certainly occur, in which, from a view of the symptoms, it might be difficult to decide, whether the disease were tetanus or hydrophobia. Dr. Bardley describes the case of a young gentleman, who, after having had his finger slightly wounded by a splinter of wood, was affected in about a week with spasms about the lips, locked jaw, and paroxysms of general spasm. On the third day after the attack he could not swallow any watery fluids. "Whenever they approached his mouth, the convulsive spasms of the face returned, and his head was forcibly drawn backwards." (Mem. of the Manchester Soc. vol. iv. p. 477.) The person who communicated this case, had formerly seen the same symptoms produced by the bite of a horse. Both these patients recovered. Similar examples of the occurrence of hydrophobic symptoms, arising in cases of local injury, are mentioned by Hildanus, Cælius Aurelianus, and others.

It must be observed, however, that the *tetanic* spasms generally commence within a few days after the injury, or in a much shorter period than those of rabies; that the jaw is commonly rigidly locked in tetanus, and the muscles of the neck and back most particularly affected; that the spasms are of a more fixed or "*tonic*" species, (in the language of Cullen) consisting of rigid and long-continued contraction, rather than of short convulsive action, and are relieved rather by remission of their violence, than by a com-

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plete solution of the spasm; that there is less feverishness, quickness of pulse, and thirst in tetanus; and above all, that there is little of that extreme mobility of feeling, and anxious, impatient, and apprehensive state of mind, which marks the hydrophobic condition.

There is another disease, *hysteria*, which, in some of the many forms which it assumes, occasionally puts on a hydrophobic appearance. The leading symptoms of this disease are often of a violently spasmodic nature; and one of them, which has been considered as pathognomonic, the *globus hystericus*, consists in a spasmodic affection of the gullet, and is often connected with difficulty of swallowing. But the concurrence of symptoms in hysteria, generally differs altogether from those of rabies, and could lead to no mistake, had not the error of regarding the *dread of water* as the essence of that disease been adopted. In consequence of this error, and the improper application of the term *hydrophobia*, as the name of the disease, extreme confusion has occurred in the history of canine madness.

Thus while some physicians, misled by this name, have described cases of *spontaneous hydrophobia*, *i. e.* hydrophobia arising without any obvious exciting cause; others have referred the origin of the disease to various causes, altogether different from each other. Dr. Rush, for instance, enumerates *twelve* causes of hydrophobia, besides the bite of a rabid animal; among these are cold night air, worms, eating beech nuts, great thirst, fear, hydrocephalus, and typhus fever. (See *Med. Inq. and Obs.* vol. v. p. 213.) The truth is, that the symptom *hydrophobia* is so far from being peculiar to canine madness, that it occurs in a number of other diseases; and, on the other hand, it is in some cases said to be actually *absent* from the true rabies. A fatal case of canine madness is related by Hildanus, (p. 365. observ. 88.), in which there was no hydrophobia. And three cases of the same nature are mentioned by Dr. Mead. (On Poisons, p. 147.) But the number of disorders in which a difficulty of swallowing, and a concomitant hydrophobia occurred, is very great. Mead, Morgagni, Plater, and others notice it as accompanying hysteria. "I have known it," says the first named physician, "in the height of a violent hysterical disorder, to have continued for many hours, till the convulsive motions in the throat were quieted by proper medicines; and I remember a case, in which fits of a palpitation of the heart were attended with so great a degree of it, that it seemed not to differ from the true hydrophobia." (Loc. cit.) Boerhaave used to mention an instance of it accompanying a fever occasioned by heat and fatigue, joined to the abuse of spirituous liquors. It has been observed connected with various inflammatory and spasmodic affections of the throat, gullet, and stomach. Thus Sauvages quotes one case, where it supervened to typhus; and another, where it accompanied the variolous sore throat. (See *Nosol. Method.*) But the most remarkable cases of this nature are to be found in the *Edin. Medical Essays*, (vol. i. p. 222 and 227,) in which hydrophobia was produced by unusual irritation in the stomach, without the most distant suspicion of rabid poison. In one of these cases there was violent inflammation of the stomach, the patient frequently spouted saliva from his mouth, and had all the horror at the sight of water, which occurs in cases of true rabies, where the difficulty of drinking has been experienced. Both these persons recovered (See *GASTRITIS*.) The symptom hydrophobia, or *dread of water*, has also accompanied pleurisy and peripneumony (see *Ferriar's Med. Hist. and Res.* vol. iii. p. 24—26.); and the writer of this article once saw it connected with St. Vitus's Dance.

But farther, this symptom, the dread of liquids, un-

connected with rabies, does not always arise from local irritation; it has been brought on by violent affections of the mind, in irritable and delicate habits, and terminated fatally. (See two cases from Plater and Sauvages, quoted by Dr. Bardley, in *Manchester Trans.* vol. iv. p. 470.) Dr. Percival has remarked, that it has sometimes been brought on by the imagination alone; and Dr. Ferriar, in illustration of this remark, says, "I met with an instance of this kind lately, in which it was very difficult to prevent a person from rendering himself completely hydrophobic. Himself and his wife had been bitten by a dog which they supposed to be mad. The woman thought herself well, but the man, a meagre hypochondriacal subject, fancied that he had uneasiness in his throat, and that he could hardly swallow any thing. When he first applied to me, a medical friend who was present, asked him whether he had any sensation of heat at the pit of the stomach. He answered in the negative, doubtfully; but, next day I found him in bed, complaining of *heat in the pit of the stomach*, difficulty of swallowing, tremors, and confusion in the head. He continued to persuade himself he was ill of rabies, and confined himself to bed, expecting death for near a fortnight. At last I remarked to him, that persons who were attacked by rabies never survived more than six days; this drew him out of bed, and he began to walk about. By a little indulgence of his fears, this might have been converted into a very clear case of *spontaneous hydrophobia*, and the patient would probably have died."

The use of the appellation hydrophobia, then, deduced from a single symptom, which belongs to a variety of diseases, evidently tends only to mislead, as the respectable physician just quoted remarks, by diverting the attention of practitioners to supposed analogies, which have no other foundation than the abuse of a word. To be correct, *we must preserve the distinction* between rabies, and diseases which are essentially different from it in their usual appearance, and which only acquire an adventitious resemblance to it under uncommon circumstances. We may, therefore, reasonably question the existence of such a disease as *spontaneous hydrophobia*. "If those cases be analyzed," Dr. Ferriar remarks, "they will be found to belong to the class of hysterical, febrile, mental, or spasmodic disorders, and by ranking them under their proper titles, we shall at once clear this subject from a great and accumulating mass of error. By considering the matter in this point of view, we are also enabled to explain the contradictory reports hitherto so perplexing, on the effects of remedies in rabies. It is easy to perceive, that evacuant and antispasmodic remedies would remove a difficulty in swallowing, occasioned by inflammation or spasm in the stomach or œsophagus; that bark and wine would cure it in cases of typhus and low mania; and that opium and the cold bath would be successful, when it is accompanied by tetanus." Vol. iii. p. 30. See also Hunter, in *Trans. of a Society*, &c. p. 203. Mease on Hydrophobia, p. 6—11.

Prevention and Cure.—As no remedy has been discovered which has any effect in the removal of this extraordinary disease, when its symptoms have commenced, the means of prevention have ever been deemed objects of the first importance. For this purpose numerous prophylactics have been proposed from early times, and many are in general use, which are supposed to counteract or expel the poison, by their effects upon the constitution. Notwithstanding, however, the testimony of discerning physicians, expressed in terms of the greatest confidence, in favour of particular preventive medicines; upon fairly weighing the proofs of their efficacy, not one appears entitled to the smallest credit.

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It will be almost sufficient to enumerate the remedies which have been suggested for this purpose, without any comment. The absurd jumbles of *theriaca*, whether old or new, Mead admits to be unworthy of notice; and from this censure we cannot except the ashes of river craw-fish, burnt alive upon copper, which Galen and Dioscorides aver to be invariably successful;—the roasted liver of the mad dog;—the sponge or excrescence of the dog-rose;—the famous aromatic opiate of Scribonius Largus;—the powder of tin with mithridate, so extolled by Mayerne, Grew, &c.;—nor even the *lichen-cinereus*, (ash-coloured liver-wort,) or the *pulvis antilyssus* (composed of this lichen and pepper), which Mead himself introduced into the pharmacopœia of the London college, and which he affirms he had never known to fail of success, though he had used it a thousand times. (See Mead on Poisons, p. 158. et seq.—Boerhaave, Aphorism 11+7, with Van Swieten's commentary.) So confident, indeed, was that learned physician in the powers of this drug, that he affirms, "I have often wished, that I knew so certain a remedy in any other disease!" Another preventive, which was introduced from China by sir George Cobb, and has been called the *Tonquin* medicine, has been equally extolled as an infallible prophylactic: this consists of large doses of *musk* and native *cinnabar*. The Chinese give it in the dose of sixteen grains of musk, conjoined with a scruple of native, and the same quantity of facitious cinnabar, which, if it fail to procure sleep and sweating, is repeated in three hours. (See Hillary on the Dis. of Barbadoes, p. 266.) But this medicine, like the preceding, has been found to fail altogether. There is another pretended specific, which claims our attention chiefly because it stood high in reputation for many years, and is even now scarcely laid aside: this is the famous *Ormskirk* medicine, prepared by Mr. Hill of that town. It has been too clearly proved, however, that this medicine is incapable of preventing the accession of rabies in persons bitten by rabid dogs. Dr. Fothergill was among the first to represent, from a very clear case, (that of Mr. Bellamy, Med. Obs. and Inquiries, vol. v. art. 19.) that its virtues were not equal to its reputation; and other cases have subsequently occurred, in which the disease ensued and terminated fatally, notwithstanding the fullest use of the medicine. (See Dr. Babington's case in the Med. Records and Researches, Hamilton, vol. i. p. 165, &c.) Indeed, if the analysis of Dr. Heysham, which was repeated by Dr. Black, be correct, it would seem pretty evident *à priori*, that this celebrated Ormskirk nostrum could not possess any active properties; its principal ingredient being *chalk*! From the analysis of this eminent professor and his pupil, the whole composition is as follows; namely, half an ounce of powdered chalk, ten grains of alum, three drams of Armenian bole, one dram of the powder of elecampane root, and six drops of the oil of anise. (See Heysham. Diss. Inaug. De Rabie Caninâ, Edin. 1777.) After the failure of so many medicines, which have been reputed infallible, and after such men as Dr. Mead could be deceived into the belief of such infallibility, the writer of the article DOG, in this work, must expect that another "specific" will be received by most readers with a great degree of scepticism, notwithstanding the number of experiments which he alleges in its support. This remedy consists of a decoction of the fresh leaves of rue and of the tree-box, of each two ounces, and of sage half an ounce. He avers that this medicine was given to ninety animals, of which only one went mad; and that about forty human persons have taken it, of whom none suffered the disease. But we are disposed to fear that this will be found liable to the same censure which is applicable to all the rest.—"No one of them," to borrow the words of Dr. Rush,

"has, I believe, done any more good, than the boasted specifics which have been used to eradicate the gout or to cure old age."

But how, it will be asked, have these medicines obtained the credit which they have for a long time possessed? Probably, from some of the following circumstances attending the bite. 1. The animal may have been enraged, but not diseased. 2. He may have been diseased, but not rabid. There is no doubt that *the distemper*, and other febrile disorders of dogs, have been mistaken for rabies. (See a paper of Dr. Jenner's on this subject, Medico-Chirurg. Transf. vol. i. p. 236.) 3. The saliva, when infectious, may have been so wiped off the teeth in passing through the clothes of the person bitten, as not to have entered the wound. This is rendered extremely probable by the circumstance that bites in the face have been most frequently followed by hydrophobia. But 4th, and above all, it is now a well ascertained fact, that of those who have been bitten by dogs, actually rabid, a very small number have been afterwards seized with hydrophobia, whatever treatment was adopted, or even when nothing whatever was done with a preventive view. It may be added, however, that, as mental impressions occasionally both excite and cure hydrophobic symptoms, and especially the supposed incipient symptoms, so any of these nostrums, in which the patient placed confidence, would remove these imaginary threatenings of the disease. See Dr. Percival's Letter to Dr. Haygarth, in the London Med. Journal for 1789, vol. x. p. 300.

We are induced to notice another prophylactic, chiefly from the antiquity of its origin, and the general credit which it obtained even to recent times: this is the employment of cold-bathing. Celsus first mentions this remedy, but recommends it principally as a cure; and apparently upon theoretical principles, though he calls it *unicum remedium*. (De Med. lib. v. cap. 27.) For, as the patient both desires liquids and fears to drink, he advises that he be thrown unawares into a fish-pond; and, if he cannot swim, that he be ducked several times and taken up again, and, if he can swim, that he be forcibly immersed, and compelled to swallow water, "so that his thirst and dread of water may be cured together." From this absurd notion, apparently, the practice of half-drowning persons bitten by rabid animals, in modern times, has arisen: but ample experience has demonstrated that the practice is not less frivolous than the theory upon which it was built; and among those who have undergone the operation of immersion, whether by mere dipping, or to the extent of "drowning and recovering by turns," as Mead calls the ancient practice, an equal proportion have been subsequently attacked with rabies, as among those who have not been submitted to this mode of treatment.

Notwithstanding the inefficacy of all the alleged antidotes to the poison of a rabid animal, there still remains a method by which it is probable that the occurrence of hydrophobia may be effectually prevented: this consists in the local treatment of the wound occasioned by the bite. As the subsequent malady originates from the operation of the poison, introduced with the saliva of the rabid animal, any expedient by which the poison could be destroyed or removed, previous to its operation on the constitution, would of course secure the individual from its effects. Upon this principle, the ancients recommended the enlargement of the wound by incision, the application of a cupping-glass, and of the actual cautery, and the maintenance of a discharge for many days, (see Celsus, lib. v. cap. 27. Galen. de Ther. lib. i. cap. 16.) a practice which has been followed by more modern practitioners. Hildanus Obs. Cent. i. Obs. 87. Mead, loc. cit. p. 156.

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In order to fulfil this indication by the local treatment of the wound, the following points appear to deserve attention ; 1st. The removal of the poison by washing the parts simply ; 2dly. The destruction of the part by *caustic* ; and, 3dly. The *excision* of it by the knife. The first measure, or ablation of the wound, has been strongly recommended by Drs. Haygarth and Percival, to be commenced immediately after it may have been inflicted. The practice is safe, and may possibly be beneficial, when thus early resorted to ; it may also be advisable, where the wound has been inflicted in the face, near the eye, or near some large blood-vessel ; or where the patient resists all sollicitation to submit to the knife ; or where there may be so little probability of the madness of the dog, as to render it unjustifiable to subject the patient to present pain, and future deformity. (Percival, in Lond. Med. Journal, vol. x. p. 308.) This washing, however, must be conducted with the most persevering attention, in bad cases, for several hours, first by an abundant effusion of cold water, and afterwards of warm water ; “ a continued stream of it, poured from the spout of a tea-kettle, held up at a considerable distance, is peculiarly well adapted to this purpose. If the canine poison infused into a wound were of a peculiar colour, as black like ink, we should all be aware that plenty of water and patient diligence would effectually wash out the dark dye ; but this could not be expected by a slight and superficial ablation.” (Haygarth, *ibid.* p. 297.) Whence Dr. Haygarth advises the plan of colouring the wound with saliva tinged with ink, after it has been carefully washed ; and, after a few hours, to wash out the stain ; by which we obtain a sort of ocular proof of the complete ablation. Dr. J. Hunter remarks, that as there may be cases in which insurmountable objections to more effectual steps may render this method worthy of trial, it would probably be more successful, if, after washing copiously with cold water, the caustic alkali was to be added to the water, in such proportion as the part could easily bear, and the washing to be continued with this for some time. *Transf. of a Society, &c.* before quoted.

The same author observes, that *caustics* may be admissible in some cases, when the knife cannot be used ; and though they have failed in certain instances, yet that was probably owing to their not having been applied to all the infected surfaces : and he suggests the propriety of employing for this purpose the caustic vegetable alkali in a solid form, because it acts more speedily, and also more completely destroys and dissolves all animal substances. It appears that this caustic substance has actually been employed for many years by Mr. Simmons, and the other surgeons at the Manchester infirmary, with uniform success ; in upwards of forty cases, in which Mr. Simmons applied the *kali purum*, or caustic potash, to the bitten parts, no hydrophobia ensued. *Ferriar's Med. Hist. &c.* vol. iii. append. p. 221.

The only certain means, however, hitherto employed as a preventive of the disease in question, are to be found in the *excision* of the parts wounded ; and, therefore, whenever the parts can be cut out, it ought always to be done. This operation must be performed with a bold hand, and the utmost care must be used to effect the removal of every part with which the dogs teeth may have come in contact ; for the smallest portion left might produce the disease. It becomes, therefore, necessary for the operator to examine accurately every portion of the wound, and to ascertain to what depth, and in what direction, the teeth may have penetrated, keeping in his mind the situation of the parts in the act of biting, in which the skin and flesh are pinched up, and therefore put out of their natural position, before the teeth penetrate them. He should again cautiously examine the wound, after the

excision has been made, in order to ascertain that every part lacerated by the teeth has been removed,

An important question here arises, in regard to the period after the bite, at which the operation of excision may be performed with security to the patient. This can only be solved after a long and cautious experience, which, on this subject is rendered uncertain and difficult to be obtained, by the numerous failures of the poison to excite the disease, independently of any preventive measures. And, in a theoretical point of view, it may seem to involve another question, which has been much discussed ; namely, whether the poison produces its deleterious effects on the constitution, in consequence of being taken up by the absorbents, and carried into the circulation ; or whether it acts merely upon the extremity of the nerves of the part, and through the medium of them influences the rest of the nervous system. Such a question, however, is perhaps beyond our decision, and is not necessarily connected with the practical one previously stated. We may just mention, that, in the case related by Dr. Marcet (*Medico-Chirurg. Transf.*), in one of those described by Dr. Babington, and in another, detailed in the *Medical Communications*, vol. ii. the pain, originating in the bitten part, at the commencement of the hydrophobia, seemed to follow the course of the nerves, rather than that of the absorbents, and was not connected with any affection of the axillary glands, in the two former cases, in which the bite was in the hand, nor of the inguinal glands in the latter, where the bite was in the leg. Mead imagined that, as the poison “ immediately affects the nervous liquor, the mischief must have taken place before any applications of this kind can be made.” But while, on the one hand, we have instances on record, in which the excision was performed with success many hours, and even four or five days, after the bite ; so we observe, on the other, that the poison appears to lie long dormant in the part, and only to affect the system, after the new inflammation or pain occurs, which gradually extends to the centre. Whence the most rational conclusion appears to be that, which Drs. Cullen, Babington, John Hunter, Marcet, and others have adopted, that the poisoned part might be removed not only many days, but many weeks after the bite, or, in short, at any time antecedent to the appearance of the symptoms just mentioned, which indicate the passage of the poison into the system, and the consequent impending rabies. Analogy, Dr. Babington remarks, as well as observation, seems to lead to this inference. “ For it is universally understood, that, in other diseases communicable by inoculation, that is to say, by the local application of the infection or poison producing them, there is a specific period, prior to which the disorder may be at any time prevented, by the removal of that part where the matter was at first introduced.” (*Med. Records and Researches*, p. 127.) See also *Mémoires de la Soc. Roy. de Médecine de Paris*, where there are many instances of local treatment being effectual in preventing the disorder in question, at the expiration of many days.

An account of the *treatment of hydrophobia*, when the disease has already appeared, will not occupy much of our attention ; as it must be a mere enumeration of fruitless expedients, and of medicines altogether destitute even of palliative influence. Nevertheless, it is well that we should be acquainted with the unsuccessful indications, which different practitioners have heretofore pursued, and with the active agents, which they have diligently, but in vain, employed ; in order that we may not be occupied in useless repetitions in future. The want of preconceived method, indeed, in investigating the cure of this disease, is very apparent in most of the writers on the subject, and is probably one of the principal

principal causes of the little progress that has been made in that important inquiry.

Among the various articles of the *Materia Medica*, that have been administered to persons affected with hydrophobia, *opium* would seem, from analogy, to be peculiarly adapted to relieve the symptoms; especially the extreme irritability of mind and body, the complete loss of sleep, and the convulsions. Accordingly it has been administered in various forms, in some cases, to an extent that is scarcely conceivable *à priori*, and yet without having been found to do any evident good. In a case related by Dr. Vaughan, fifty-seven grains of solid opium were taken in the course of fourteen hours, in addition to half an ounce of liquid laudanum, which was injected in an enema: in another instance, attended by Dr. Wavell, four grains of opium were swallowed every hour, until fifty-four grains had been taken, besides ten grains in an enema: and in a third, under the direction of Dr. Babington, the enormous doses of twenty-five grains, and *half a drachm of solid opium*, were repeated at short periods, so that in *eleven hours* no less than *a hundred and eighty grains of opium were taken without any benefit, and even without producing any sleep.* (See *Med. Records and Researches.*—Vaughan on Hydrophobia, Mease on the same, &c.) After such evidence of its inefficacy, we may almost affirm, with Dr. J. Hunter, “that it can be only imputed to the want of method and order above-mentioned, that this medicine still continues to be given in almost every case of this disease.”

Blood-letting has been a favourite expedient from the earliest records of the malady, and has been frequently employed to a very great degree. Boerhaave considered the disease as highly inflammatory, and Mead suggested the use of early and copious bleeding, till fainting was produced; Fothergill, and others of a later time, employed it freely; and Dr. Ferriar, deeming an inflammatory congestion in the lungs an essential part of the disease, as well as a similar condition in the contents of the cranium, says that “blood should be drawn from the jugular veins, and perhaps the head and lungs would be best relieved by the repetition of bleedings.” Dr. Nugent’s case is quoted as an example of the efficacy of blood-letting in the disease; but that case is a questionable example of rabies; and both from the series of preceding symptoms of declining health and spirits, and from the course of the disorder itself, appears to be rather referable to hysteria than to rabies. In one of the cases, described by Dr. Babington, blood-letting was practised without the smallest benefit; and in the other it appeared to do harm.

Cold bathing, or the *affusion of cold water* over the body of the patient, has been frequently employed as a curative, as well as a preventive measure. Celsus recommended it only when the hydrophobia had appeared; and Van Helmont affirms, that he cured an old man by submersion in salt water, (*Ortus Medicinæ.*) But in the hands of Boerhaave, Mead, Vaughan, and many others, this expedient has been as inert as any of the preceding. (See Mead, *loc. cit.* p. 173. 182. Hamilton, vol. ii. p. 14.) In tetanus the cold affusion has of late been found beneficial; and it is probable that the spasmodic affections, cured in this manner, were of a tetanic nature, and not rabies.

The *warm bath* has proved equally inert; and the free administration of *mercury*, both internally and by friction, has evinced no greater powers. The use of *oil*, which was recommended by Celsus and Cælius Aurelianus, and suggested more strongly from its beneficial effects in cases of poisonous bites inflicted by insects and reptiles, was revived a few years ago by Dr. Shadwell, of Brentwood (see *Memoirs of the Med. Soc. of London*, vol. ii.); and it has been employed in the way of a bath, by friction, and also

taken internally; but it has proved altogether inert, and some patients, immersed in an oil bath, have appeared to have their sufferings increased. (See Hamilton, vol. ii. p. 54. 56.) In one case, indeed, the patient is said to have recovered: but the course of the symptoms, and the duration of the disease, did not strictly accord with the ordinary appearance and brevity of hydrophobia. The employment of various antispasmodics, as *camphor*, *assafatida*, *castor*, &c.; of the metallic tonics, as the oxyd or flowers of *zinc*, the *cuprum ammoniatum*, &c. (largely administered in Dr. Vaughan’s cases); and of *sudorifics* and *diuretics*, (see Mead,) of *vinegar*, of *cantharides*, of *blisters*, and *rubefacients*, has been attended with the same failure as that of the medicines already detailed.

Such being the inadequacy, then, of all the expedients hitherto adopted for the cure of rabies, and such the difficulty of acquiring any accurate notion of the nature and seat of the disease, even by the most accurate anatomical investigation, we acknowledge ourselves altogether unable to suggest any system of treatment, which might be particularly worthy of trial, in future cases of the disease. Dr. John Hunter proposes a trial of *arsenic*, which is the principal ingredient in a pill, used in the East Indies, and said to be a specific against the poison of serpents, and also against the bite of a mad dog. He also suggests the probability of diminishing the effects of the poison, (which is apparently confined to the part bitten, until the symptoms actually begin,) by making numerous and deep scarifications where the wound was, and applying cupping glasses repeatedly; by using ligatures; or by applying ice or a freezing mixture to the part, so as to benumb it, and to arrest for a time all motion, and of course that of the absorbent vessels. Dr. Rush believes, that “the disease produced in the human species by the bite of a rabid animal is a *malignant fever*;” and that the great debility, which ensues in its course, is the result of inflammatory action, and to be removed only by early and copious blood-letting, according to circumstances of the case, the strength and age of the patient, the state of the pulse, &c.; and Dr. Ferriar has, like Dr. Rush, experienced a similar change in his opinions, both having originally considered the debility as primary, and not as the result of increased excitement; and both have decided to treat future cases of the disease upon that principle, by depletion, and evacuations.

HYDROPHORIA, formed of *ὕδωρ*, *water*, and *φορῶν*, *I bear*, in *Antiquity*, a feast, or funeral ceremony, held among the Athenians, and people of Ægina, in memory of those who perished in the deluge of Deucalion and Ogyges.

HYDROPTHALMIA, from *ὕδωρ*, *water*, and *ὀφθαλμῶς*, *the eye*, signifies in *Surgery*, a morbid enlargement of the eye, arising from a preternatural increase in the quantity of the aqueous and vitreous humours.

In certain cases, it is the aqueous humour which collects in this manner, and then the disease is principally situated in the anterior and posterior chambers of the eye. In other instances, the vitreous humour is chiefly concerned, not merely accumulating in a preternatural degree, but also in general losing its wonted consistence, and becoming thinner and more watery. In the commencement of the disorder, the patient experiences no complaints, excepting a sense of tension about the eyeball, a kind of stiffness when the organ is moved, and a diminution in the acuteness of vision. The globe of the eye by degrees acquires a state, in which its enlargement is quite manifest, its feel harder than natural, the pupil dilated, the motion of the iris feeble, the impairment of sight much more serious, and the painful sensation of tightness about the affected organ a great deal more distressing. At length, the eyeball attains such magnitude, that it projects out of the orbit, and the patient is afflicted with complete blindness.

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The pain now becomes excessively severe, extending all over one side of the head, and frequently affecting the teeth, so as to disturb the patient's rest day and night. As the eyelids can no longer be closed, the tears fall over the cheek, and the friction of the eyelashes against the eye make this latter part inflame and ulcerate. The case, when it has made such progress, often receives the name of buphthalmos, the eyeball being, indeed, in many instances, as large as a hen's egg.

When the disease is principally situated in the anterior and posterior chambers, the cornea, not only becomes distended forwards away from the iris, but undergoes a considerable enlargement in diameter, so that the anterior chamber is frequently of extraordinary size. When the vitreous humour has the chief share in the disorder, no increase in the dimensions of the cornea is observable, and the iris, instead of being at a greater distance than usual from this membrane, is often approximated to it.

We are then to understand by the term hydrophthalmia, a dropical enlargement of the eye, and not a swelling, or protrusion, of this organ from other causes, a case to which surgical writers assign the name of exophthalmia. See EXOPHTHALMIA.

No doubt, the causes of the dropsy of the eye are as numerous as those which give rise to the same disease in other parts of the body. But, even the most credulous writers are willing to own the difficulty of ascertaining such causes in a clear and satisfactory manner. If we can trust the assertions of Richter, all the known causes of hydrophthalmia have the immediate effect of interrupting the due absorption of the humours of the eye, and act in this manner, either by producing obstruction, weakness, or irritation. The celebrated oculist, Janin, fancied, that in the healthy state there was a continual excretion of the aqueous humour through the pores of the cornea, and that the dropsy of the eye was principally owing to a closure of these pores, and a consequent stoppage to the exudation of the above mentioned fluid. Scarpa, in criticising this opinion, maintains, with much reason, that its adherents evince their imperfect acquaintance with the activity of the absorbent system in the animal economy. Besides, as Richter has well observed, the cornea, in most cases of hydrophthalmia, retains its transparency, and is to all appearances free from disease; while, in the leucoma, where it is completely opaque, indurated, and thickened, and where, in all probability, its pores are entirely impervious, we find not the least tendency to hydrophthalmia.

The dropsy of the eye is very difficult of cure, and, indeed, frequently incurable. When the disorder has once made such progress, as to have entirely deprived the patient of sight, the case no longer admits of a complete recovery. Nothing can be more obvious, than the impossibility of rectifying the injury, which the interior parts of the eye must suffer from much distention; and hence, if a perfect cure can ever be effected, it is only when the surgeon has it in his power to hinder the excessive enlargement of the eyeball. The disease may even increase in such a degree as to prove fatal. (Louis, Mem. de l'Acad. de Chir. tom. 5. Terras, Journ. de Médecine, tom. 45.) In cases of this aggravated description, the bones of the orbit are in general carious. A radical cure of hydrophthalmia is reckoned a very difficult thing to accomplish, for, when the complaint has been removed it generally returns, and the relapses are not easily prevented. The cure is equally difficult, whether the disease be chiefly occasioned by the aqueous, or the vitreous humour.

In the treatment, it is an indication of the highest importance to trace, and remove the causes of the disease. This is the only way to effect a radical and lasting cure. In

proportion as the cause is removed, the preternatural accumulation of fluid in the eye spontaneously diminishes, and does not take place again. Authors inform us, that the same causes, which produce dropsy in other parts, may also produce it in the eye. However this may be, certain it is, that practitioners are seldom enabled to ascertain the cause of the complaint with precision, and they are, therefore, compelled to treat the case on empirical principles. We learn from Scarpa, that hydrophthalmia is sometimes preceded by blows on the eye, or adjoining temple; sometimes, by an oblique internal ophthalmia; that, in certain instances, it is preceded by no inconvenience, except an uneasy sensation of tumefaction and distention in the orbit, a difficulty of moving the eye-ball, and an impairment of sight; and, lastly, that it is occasionally preceded by none of these causes, and no other manifest one whatsoever, especially when the complaint occurs in young children, from whom no information can be obtained.

The surgeon, who acts empirically, merely endeavours to procure a dispersion, or removal, of the preternatural accumulation of fluid, and though he afterwards generally employs tonics to obviate the weakness, which he supposes to have been produced in the eye by distention, and to be likely to bring on a return of the disease, yet, as he does nothing towards the removal of the original cause, he seldom succeeds in preventing a relapse.

The internal remedies, which have been administered with a view of dispersing the redundancy of fluid in the eye, consist of emetics, purgatives, diaphoretics, and diuretics, and the selection is regulated by the particular constitution of the patient. Sometimes one class of medicines have powerful effects, while the operation of another is quite inefficacious; and a short trial of the various kinds will soon inform the skilful surgeon which ought to be preferred. Nitre and squills, juniper berries in powder, or decoction, &c. are mentioned by authors as proper diuretics. The digitalis purpurea is alleged to have proved beneficial. With regard to purgatives, the kali tartarizatum is said to be the best in the generality of instances. In obstinate cases, emetics are frequently of considerable service, and, even when unaided by other means, often disperse the fluid collected in dropical diseases. They also not unfrequently promote the efficacy of diuretics and purgatives, and the latter remedies, after appearing to be ineffectual, are often rendered productive of the desired effect, by being preceded by emetics.

When none of the foregoing medicines answer the purpose, resolvents may occasionally be prescribed with advantage. Mercurial and antimonial preparations are particularly recommended. The proper plan is to give them alternately with doses of purgative and diuretic medicines. The patient may take a grain of calomel, ten grains of cicuta in powder, and a grain of sulphur auratum antimonii. When there is any reason for suspecting that the dropsy of the eye is owing to an irritation, acting on that organ, opium, castor, and saffron are recommended, in conjunction with evacuations. When debility is thought to have a share in bringing on the disease, bark, steel, and aromatic bitters, may be ordered together with diuretics.

Besides these internal remedies, several topical means have been tried, for the purpose of promoting the absorption, or dispersion of the redundant fluid in the eye. 1. Blisters applied either behind the ears, or over the eyebrows, and kept open a considerable time. 2. Issues and fetons in the arms, or nape of the neck. 3. Sternutatories. Richter mentions an instance of inveterate hydrophthalmia being cured in a few days, by the patient introducing every now and then into his nostrils a kind of snuff thus composed:

HYDROPTHALMIA.

hellebori albi gr. x. herb. majoran. ℥iv. misce. 4. Electricity sometimes appears to have done good. 5. Bathing the eye with emollient collyria was recommended by Janin, under the idea, that this method would tend to open the pores of the cornea, so as to let the aqueous humour exude. 6. Spirituous and ammoniacal vapours to excite the action of the absorbents of the eye. 7. Applications, containing borax, muriate of ammonia, &c.

It is not to be dissembled, that, in the treatment of the present disease, all internal and external remedies are, for the most part, quite unavailing. Scarpa acknowledges, that he has never yet met with a single well-detailed history of a dropsy of the eye being cured by such internal medicines as are most recommended by the best surgical authors. With regard to externals, he has learnt from his own experience, that when the disorder is manifest, astringent and corroborant collyria, as well as compression of the protuberant eye, are highly prejudicial. In this circumstance, a seton in the nape of the neck, bathing the eye in a lotion of mallows, and applying a plaster composed of this plant, have enabled him to calm, for a time, the tense and painful sensation generally experienced in the orbit, and about the temple and forehead. But Scarpa assures us, that as soon as the eyeball begins to project from the orbit, beyond the eyelids, there is no means of opposing the grievous dangers, likely to be induced by the disease, except an operation, which consists in letting out the superabundant humours of the eye by an incision, and afterwards causing the interior of the organ to inflame and suppurate, so that the eye may gradually shrink within the orbit, and heal. Were the operation deferred, the patient would be left to suffer frequent attacks of ophthalmia, and to run the risk of ulceration taking place in the eyeball and subjacent cheek: nay, what is worse, the disease is liable to degenerate into carcinoma.

The operation, which, until lately, has been generally advised for the relief of hydrophthalmia, is, what has been named, *paracentesis oculi*. When the aqueous humour is supposed to be too abundant, certain authors direct us to puncture the cornea, at a little distance from its edge with a lancet, or cataract-knife. When the vitreous humour is principally concerned in the disease, they tell us to proceed as in the extraction of the cataract, divide one-half of the cornea, open the crystalline capsule, and press out, together with the lens, a sufficient quantity of the vitreous humour to reduce the eyeball to its natural size. In doing this, considerable caution is necessary; for, too much of the vitreous humour is apt to be lost, especially when it is preternaturally liquid, and a permanent and irremediable collapse of the eye may even happen.

The apprehension of such an event introduced the plan of puncturing the eyeball with a very small trocar, at the distance of about two or three lines from the margin of the cornea, and thus discharge as much of the humours as necessary.

The redundant contents of the eye may, indeed, be evacuated by an operation; but there is greater difficulty in preventing a fresh accumulation of fluid, and the disease generally returns. The operation, when done only once, promises some chance of durable benefit, if the surgeon perform it in an early stage of the case. Benjamin Bell met with such success. Nuck also effected a radical cure by repeating the operation a certain number of times. We are not then to relinquish all hope, even though the disorder may recur. But, one thing seems now to be quite established, namely, the impossibility of accomplishing a perfect cure, and restoring the original integrity of the eye, when once

this organ has suffered such distention, that the function of vision is destroyed.

If the surgeon prefers letting out the redundant quantity of the humours in one of the foregoing ways, an endeavour is afterwards to be made to improve the tone of the eye with corroborant applications. The eye may be bathed with cold water, a decoction of oak bark, or any spirituous aromatic collyrium.

When the disease has attained such a degree, that the sight is entirely lost, and the eyeball distended far above its natural size, it is best to give up all idea of attempting a radical cure; the humours may be discharged, and an artificial eye afterwards worn.

Scarpa places little reliance in the *paracentesis oculi* as a means of effecting a permanent cure of hydrophthalmia. Indeed, he maintains, that it can never succeed, unless the puncture, made by the trocar, excite inflammation and suppuration of the interior of the eye. The method recommended by this eminent writer, is to remove a circular piece of the centre of the cornea, about three lines in diameter. Thus, an opening is made, which at once serves for the discharge of the humours, and to excite the requisite degree of inflammation within the eye. The incision should on no account be made in the sclerotica.

The sight being irrecoverably lost, Scarpa advises surgeons to introduce a small bistoury across the apex of the cornea, at one line and a half from the central point of this membrane, whether affected with opacity or not. The little femilunar flap is then to be raised with a pair of forceps, and the incision continued into a complete circle by directing the edge of the knife upwards. Through the circular aperture, thus made in the middle of the cornea, the surgeon is gently to press out as much of the superabundant humours of the eye as is requisite to lessen the eyeball, and make it return into the orbit, so as to admit of being covered by the eyelids.

Scarpa recommends merely applying a pledget of dry lint, and a retentive bandage, till inflammation begins, which generally happens about the third or fifth day. Such remedies are now to be employed as appear best calculated to moderate the inflammation; and a bread and milk poultice is to be applied to the eyelids, and changed every two hours. When, on the commencement of inflammation, the eyeball swells so considerably, as to project from the orbit again, the prominent part is to be covered with a liniment of oil and wax, or the yolk of an egg mixed with some oleum hyperici. Either of these dressings is to be laid under the bread and milk poultice. In proportion as the internal suppuration of the eye begins, the swollen state of this organ undergoes a gradual diminution.

When the removal of a piece of the cornea, to the extent above specified, fails to excite a mild inflammation and suppuration of the interior of the eye by the fifth day, Scarpa advises us either to expose the eye to the air, or to cut away a little of the whole edge of the opening already made in the cornea, so as to bring on the kind of inflammation and suppuration essential to the cure. Scarpa sulle principali malattie degli occhi, cap. 18.

The late Mr. Ford introduced a seton through the eyeball, for the purpose of lessening the size of the organ when affected with hydrophthalmia. Medical Communications, vol. i.

After operating for the relief of the present affliction, a fungus occasionally grows out of the internal part of the eye. Such an excrescence was, in one instance, destroyed by the external employment of belladonna. (Terras, Journal de Médecine, tom. 45.) But in case this or other means

fail in preventing the reproduction of the fungus, the surgeon is called upon to recommend the entire extirpation of the eye. See EYE, *Extirpation of*.

HYDROPTHALMION, from ἵδωρ, *water*, and οὐθαλμία, *the eye*, a swelling which sometimes happens just under the eye, in dropsical and cachectic habits.

HYDROPHYLACIA, of ἵδωρ, *water*, and φυλάξω, *I keep*; a word used by Kircher, and some others who have written in the same system, to express those great reservoirs of water which he places in the Alps, and other mountains, for the supply of the rivers which run through the several lower countries. This he makes to be one of the great uses of mountains in the economy of the universe.

HYDROPHYLAX, in *Botany*, from ἵδωρ, *water*, and φυλάξω, *a guardian, or keeper*, probably from the circumstance of its being always found inhabiting the sea shore.—Schreb. 68. Linn. Suppl. 14. Willd. Sp. Pl. v. 1. 581. Mart. Mill. Dict. v. 2. Juss. 210. Lamarck Dict. v. 3. 156. Illustr. t. 76. (Sariffus; Gært. t. 25.) Class and order, *Tetrandria Monogynia*. Nat. Ord. *Stellata*, Linn. *Rubiacea*, Juss.

Gen. Ch. *Cal.* Perianth of one leaf, erect, superior, permanent, divided into four, ovate, acute, bordered, somewhat fleshy segments. *Cor.* of one petal, funnel-shaped; tube longer than the calyx; limb angulated, divided into four ovate, revolute segments; throat bearded. *Stam.* Filaments four, inserted at the summit of the tube, decurrent, erect, longer than the corolla; anthers somewhat spear-shaped. *Pist.* Germen oblong, inferior; style thread-shaped, curved; stigma bifid. *Peric.* Berry dry, ovate, compressed, having three ribs on each side, the middle one highest, with an attenuated margin, a little incurved, fungous, two-celled, with a transverse partition. *Seeds* solitary, oblong, triangular, roughish, having two furrows on the inner side.

Eff. Ch. Corolla a funnel-shaped petal. Calyx four-cleft. Capsule angulated, of two cells, with a transverse partition. *Seeds* solitary.

1. *H. maritima*. Linn. Suppl. 126. (Sariffus anceps; Gært. 118. t. 25. f. 4.)—Found by Koenig on loose sand by the sea, near Gduluhr, in the East Indies.—This is the only species known. It has the habit and appearance of *Arenaria marina*, but is larger.—*Root* simple, thread-shaped, red, fleshy, sweet. *Stem* creeping, smooth, coloured, jointed, very long, furnished with obtuse, membranaceous, permanent sheaths. *Leaves* opposite, spreading, ovate, acute, entire, fleshy, shining, interspersed with small, whitish, pellucid tubercles; leaf-stalks short, sheathing the stem, and becoming, when the leaves fall, permanent sheaths. *Flowers* axillary, usually in pairs, but not opposite, erect, of a pale blue colour. *Anthers* blue.

HYDROPHYLLUM, from ἵδωρ, *water*, and φύλλω, *a leaf*, expressive of an aquatic leaf, but Tournefort censures this appellation, saying the plant grows in a rich, but not very watery soil. Miller conjectures that M. Morin gave the genus this name because, in spring, water is usually found in the cavity of its leaves.—Hence its English appellation, *Water-leaf*.—Linn. Gen. 83. Schreb. 109. Tournef. t. 16. Willd. Sp. Pl. v. 1. 814. Mart. Mill. Dict. v. 2. Ait. Hort. Kew. v. 1. 197. Juss. 129. Lamarck Dict. v. 3. 157. Illustr. t. 97. Gært. t. 110.—Class and order, *Pentandria Monogynia*. Nat. Ord. *Borraginæ*, Juss.

Gen. Ch. *Cal.* Perianth scarcely shorter than the corolla, spreading, permanent, of five deep, awl-shaped segments. *Cor.* of one petal, campanulate, cloven into five, erect, obtuse, emarginate segments; nectary, a chink closed by two longitudinal converging plates, fastened to the petal, within the middle of each segment. *Stam.* Filaments five, awl-

shaped, longer than the corolla; anthers incumbent, oblong. *Pist.* Germen ovate, pointed; style awl-shaped, the length of the stamens; stigma bifid, acute, spreading. *Peric.* Capsule globose, of one cell and two valves. *Seed* solitary, round, large.

Eff. Ch. Corolla bell-shaped, having five, longitudinal, honey-bearing streaks on the inside. Stigma bifid, capsule globose, two-valved.

1. *H. virginianum*. Linn. Sp. Pl. 208. Lamarck. Illustr. t. 97. f. 1.—“Leaves pinnatifid.”—Native of Virginia and Carolina, on a moist boggy soil; flowering in May and June. A hardy herb, whole *root* is fibrous, and spreading. *Leaves* rising from the root on footstalks, indented on their edges, veiny, of a shining green. *Flowers* also coming from the root, hanging down in loose clusters, rather inconspicuous. *Seeds* irregularly ovate and angular, elegantly reticulated with very minute excavations, yellowish white.

2. *H. canadense*. Linn. Sp. Pl. 208. Lamarck Illustr. t. 97. f. 2.—“Leaves lobate-angular.”—Native of Canada, and flowering in May.—Very similar to the last except in foliage, and in this respect *H. canadense* is not unlike the *Acer* or *Maple*, for its leaves are half five-lobed, smooth, with the lobes acute, slightly toothed, and having a sinus at the insertion of the footstalk.

These plants are very hardy, and should be placed in a moist rich soil.

3. *H. appendiculatum*. Michaux. Boreal.-Amer. v. 1. 134. “Very hairy all over. Radical leaves somewhat pinnatifid. Sinuses of the calyx with reflexed appendages.”—Michaux found this in mountainous woods of North America. He describes the *flowers* as in somewhat panicked clusters, of a blueish colour, their calyx having reflexed appendages, like some species of *Campanula*.

HYDROPHYSOCELE, an old term in *Surgery*, implying a hernia, in which a good deal of fluid and air is contained. The word is compounded of ἵδωρ, *water*, φυσω, *a flatus*, and κίρσις, *a hernia*.

HYDROPIA, synonymous with *dropsical*, being the adjective from *hydrops*; which see.

HYDROPIPER, in *Botany*. See *ELATINE*.

HYDROPNÉUMATOCELE, from ἵδωρ, *water*, πνεῦμα, *wind*, and κίρσις, *a tumour*, a hernial swelling containing a large proportion of air and fluid.

HYDROPNÉUMOSA, an ancient term in *Surgery*, signifying a tumour containing water, air, and any fleshy substance. The word is derived from ἵδωρ, *water*, πνεῦμα, *wind*, and σαφῆς, *flesh*.

HYDROPOTA, of Ἰδρποτης, formed of ἵδωρ, *water*, and πίνω, *drinker*; of πίνω, *I drink*, in *Medicine*, a person who drinks nothing but water.

It has long been controverted among physicians, whether or no the hydropotæ lived longer than other persons? See *DRINK*.

HYDROPS, ἵδρωψ, of ἵδωρ, *aqua*, and ψ, *vultus*. See *DROPSY*.

HYDROPS ad matulam, literally “a dropsy into the chamber-pot,” a term sometimes used to signify a *diabetes*.

HYDROPYRETOS, formed of ἵδωρ, *water*, and πυρετός, *fever*, a word used by some authors to express a malignant fever, attended with very copious sweats. Some make it the same with the sudor Anglicus, or sweating sickness.

HYDRORACHITIS, from ἵδωρ, *water*, and ῥαχίς, *the spine*, denotes, in *Surgery*, a particular kind of tumour situated on the vertebrae, remarkable for being of a most incurable nature; and proving fatal, when it bursts or is punctured,

punctured. The case will be considered hereafter. See *SPINA bifida*.

HYDRORHODINON, formed of ὕδωρ, *water*, and ῥόδοι, *rose*; a name given by the ancients to a mixture of water and oil of roses. This, as it was at once cooling and emetic, was very much used by the ancients, to provoke vomiting after the taking of poisons.

HYDROROSATON, in the *Writings of the Ancient Physicians*, a name given to a drink made of water, honey, and the juice of roses. The proportions were four pounds of roses, five pints of water, and two pints of honey.

HYDROSA'RCA, from ὕδωρ, *water*, and σαρκίς, *flesh*, in *Surgery*, any fleshy tumour containing fluid.

HYDROSA'ROCELE, from ὕδωρ, *water*, σαρκίς, *flesh*, and κελύ, *a tumour*, signifies a hydrocele, or preternatural accumulation of fluid in the tunica vaginalis, attended with a chronic enlargement or induration of the testicle. See **HYDROCELE** and **SARCOCELE**.

HYDROSCOPE, ὑδροσκοπίου, formed of ὕδωρ, *water*, and σκοπεῖν, *I consider*; an instrument anciently used for the measuring of time.

The hydroscope was a kind of water-clock, consisting of a cylindrical tube, conical at bottom; the cylinder was graduated, or marked out with divisions, to which the top of the water becoming successively contiguous, as it trickled out of the vertex of the cone, pointed out the hour.

Synefius describes the hydroscope at large in one of his letters. See **CLEPSYDRA**.

HYDROSELINUM, in *Botany*, a name given by some authors to smalage.

HYDROSTATIC BALANCE, a kind of balance contrived for the easy and exact finding the specific gravities of bodies, both liquid and solid.

The instrument is of considerable use in estimating the degree of purity of bodies of all kinds; the quality and richness of metals, ores, minerals, &c. the proportions in any mixture, adulteration, or the like; of all which the specific weight is the only adequate test.

The hydrostatical balance is founded on this theorem of Archimedes, that a body heavier than water weighs less in water than in air, by the weight of as much water as is equal to it in bulk. Whence, if we subtract the weight of the body in water from its weight in air, the difference gives the weight of as much water as is equal in magnitude to the solid proposed.

Having, therefore, two bodies, the one firm, the other fluid, together with the weight of each apart; to find their proportion, divide the greater by the lesser; the quotient compared to one, that is, unity, will be the antecedent of the proportion desired.

The instrument, with its apparatus, is represented *Plate X. figs. 7 and 8, Hydraulics*, and needs little description. See **GOLD**.

AB is a nice balance, turning with a small part of a grain, and furnished with a long examen D, for determining the exact horizontal position of the balance.

1. To find the specific gravity of a fluid: hang to the end B of the beam the little scale S, and to the bottom of the scale S, by a horse-hair, which is of the same specific gravity with water, the glass bubble G, which must be specifically heavier than any fluid except mercury. To the opposite end A of the beam hang a brass scale E, which is a counterpoise to the bubble G, immersed in water; but when the bubble hangs out of the water, a weight must be laid on E to keep it *in equilibrio*, which weight will be equal to what the bubble lost in water, or to a bulk of water

equal to the bubble; when rain-water is used, this weight will be a thousand grains. Then fill a cylindrical vessel I, about two-thirds with common water; and when the bubble is let into it, the beam will remain in a horizontal position, if the water be of the same specific gravity as that in which the bubble was adjusted; if it be not, there will be a variation; which is to be corrected by means of little weights for that purpose. Having thus adjusted the bubble in water, the specific gravity of any other fluid will be found by weighing the bubble in it; and since you always weigh so much of the liquid as is equal to the bulk of the bubble, if there be any difference between such quantity and the like quantity of water, it will be discovered by putting weights into the ascending scale. E. g. if red port wine be put into the vessel I, the bubble will sink, and require the addition of ten grains in the scale E, when the balance has been adjusted in rain-water, for restoring the equilibrium; which shews that port wine is lighter than rain-water ten parts in a thousand, or one hundredth part. If proof brandy be used, seventy-seven grains will be required to restore the equilibrium, and therefore brandy, or proof spirits weighs, seventy-seven parts in a thousand, or one-thirteenth part less than rain-water. But in a denser medium G would rise; and if sea-water be used, twenty-six grains must be put into the scale S to restore the equilibrium, which shews that sea-water is twenty-six parts in one thousand, or one thirty-eighth part heavier than rain water.

2. To find the specific weight of a solid; instead of the bubble, hang on the glass bucket K, *fig. 8*. which with its suspending piece H, will be *in equilibrio* with the counterpoising scale E. Having weighed the solid in air in the bucket, by counterpoising it with weights on the scale E, note its weight; but because not only the solid to be tried, but the glass bucket itself will lose of its weight when immersed in water, you must restore to the bucket the weight that it loses by being immersed, that the body in it alone may be examined: this is done by means of the piece F, which weighs just as much as a bulk of water equal to the bucket; and being slipped on the suspending piece at H, it not only restores to the bucket what it had lost by being immersed in water, but makes a scale for receiving weights, in order to restore the equilibrium to the solid contained in the bucket, and to shew how much it has lost of its weight in water. When many bodies are to be weighed hydrostatically, it is best to weigh them all in the air successively, and set down their weights before you begin to weigh them in water, because it would be troublesome to dry the bucket every time. Care must also be taken that no bubbles of air adhere to the bodies weighed in water, which would make them lighter.

Dr. Defaguliers has added a contrivance to this machine to make it more nice, see *fig. 9*. S, S, S, are three screws which serve to set the foot and stem upright; and OM is a string and plummet, whose point hanging over M, shews when the piece PC is truly vertical. There is also a piece EO, which has a slit to compare with the examen D playing in the notches Cc. Defag. Exp. Phil. vol. ii. p. 196.

Mr. Martin proposes the following construction of an accurate hydrostatical balance. AB, (*see fig. 10.*) is the foot on which it stands; CD, a pillar supporting a moveable brass plate EF, fastened to it by the screw in the knob e. In the end of this plate is fixed an upright piece IK, supporting another plate GH, which slides backwards and forwards thereon, and is moveable every way about it. In the end of this plate at H, is fixed (by a nut beneath) a wire LM, taped with a fine thread from one end to the

other; upon this moves the swan-neck slip of brafs NO, to which a very exact balance is hung at the point N; to one of whose scales P, is appended the heavy body R, by a fine horse-hair, or piece of silk S; the weight of the said body R in the air is expressed by the weights put into the scale Q to make an equilibrium therewith, which being destroyed by immersing the solid in the fluid TV, contained in the glass WV, is again restored by weights put into the scale P. So that the weights in the scale Q compared with those in the scale P, shew at once the specific gravity of the solid R to that of the fluid TV.

For several other constructions of this instrument, designed for greater accuracy than that of the common sort, the reader may consult s'Gravesande's *Physices Elem. Math.* &c. tom. i. lib. 3. cap. 3. The specific gravities of small weights may be determined by suspending them in loops of horse-hair, or silk threads, to hook at the bottom of the scale of the common hydrostatical balance. *E.g.* if a guinea suspended in air be counterbalanced by 129 grains in the opposite scale; and upon being immersed in water, requires $7\frac{1}{2}$ grains to be put into the scale over it, in order to restore the equilibrium; we thus find that a quantity of water of equal bulk with the guinea, weighs $7\frac{1}{2}$ grains, or 7.25; by which divide 129, the weight of the guinea in air, and the quotient, or 17.793, shews that the guinea is so many times heavier than its bulk of water. Whence, if any piece of gold be tried, by weighing it first in air, then in water, and if upon dividing the weight in air by the loss in water, the quotient is 17.793, the gold is good; if the quotient be 18, or between 18 or 19, the gold is very fine; but if it be less than $17\frac{1}{2}$, the gold is too much alloyed with other metal. If silver be tried in this manner, and found to be eleven times heavier than water, it is very fine; if it be $10\frac{1}{2}$ times heavier it is standard: but if it be any less weight, compared with water, it is mixed with some lighter metal, such as tin.

In order to find the specific gravities of those bodies that are lighter than water, let any upright stud be fixed into a thick flat piece of brafs, and in this stud let a small lever, whose arms are equally long, turn upon a fine pin as an axis. Let the thread which hangs from the scale of the balance be tied to one end of the lever, and a thread from the body to be weighed, be tied to the other end. This done, put the brafs and lever into a vessel; then pour water into the vessel, and the body will rise and float upon it, and draw down the end of the balance from which it hangs; then put as much weight in the opposite scale as will raise that end of the balance, so as to pull the body down into the water by means of the lever; and this weight in the scale will shew how much the body is lighter than its bulk of water. *Ferguson's Lect.* p. 160, 8vo.

Otherwise: Take another body of a compact form, but much heavier than an equal bulk of water, so that when this body is connected with the body in question, they may both sink in water. This being prepared, ascertain the weight of the lighter body in air, and the weight of the heavier body in water. Then tie, by means of thread, both bodies together, but not so closely as to exclude the water from, or to harbour bubbles of air between them; and weigh them both in water. Now since the heavy body is partly buoyed up by the lighter body, the weight of both in water will be less than the weight of the heavier body alone. Subtract the former from the latter, and add the remainder to the weight of the lighter body in air; for this sum is the weight of a quantity of water equal in bulk to the lighter body. Therefore the weight of the lighter body in air must be divided by the last-mentioned sum, and the quotient will express the specific gravity of the lighter body.

E.g.—A piece of elm being varnished in order to prevent its absorbing any water, was found to weigh in air 920 grains. A piece of lead, which was chosen for this purpose, was found to weigh in water 911.7 grains. The piece of elm and the piece of lead were tied together, and being suspended from the hook of the scale, &c. in the usual manner, were found to weigh in water 331.7 grains, *viz.* 580 grains less than the lead alone; therefore 580 was added to 920 (*viz.* to the weight of the elm in air) and made up the sum of 1500. Lastly, 920 was divided by 1500, and the quotient 0.6133 expressed the specific gravity of the piece of elm.

In the use of the hydrostatical balance, it will be proper to observe the following general precautions. The water in which the solid is to be weighed, besides its being either distilled or rain water, must be quite clean. Its temperature, as well as that of the solid, must be as near as possible to 62° of Fahrenheit's thermometer; for which purpose the ball of the thermometer must be placed in the water, and the temperature is adjusted by the addition of hot or cold water. If the solid body be soluble in water, or if it be porous enough to absorb any water, then it must be varnished, or smeared over with some oily or greasy substance; but in that case some allowance must be made on account of the varnish, &c. When the solid is weighed in water, its upper part ought to be a little way below the surface of the water; for instance, about an inch; and it must by no means be suffered to touch the sides or bottom of the jar. Care must be had that no bubbles of air adhere to the solid under water; for they would partly buoy it up. These may be easily removed by means of a feather. The solid must be of a compact form, and free from accidental or artificial vacuities, so as not to harbour any air; for otherwise its specific gravity cannot be ascertained by weighing in water, &c. Thus a piece of silver, which is much heavier than water, may be formed into a hollow sphere, which will appear to be much lighter than water; for if this sphere were immersed in water, it would displace a quantity of water which is equal not only to the silver, but also to the space which is contained in the sphere. It is for this reason that a ship might be made of iron, or of copper, or, in short, of any substance whose specific gravity far exceeds that of water, and yet it would float as well as a ship which is made of wood, in the usual way. See *Specific Gravity.*

Hydrostatic Bellows, in *Hydrostatics*, is a machine for demonstrating the upward pressure of fluids (see *FLUID*), consisting of two thick oval boards A, (*Plate X. Hydraulics*, &c. *fig.* 11.) each about sixteen inches broad, and eighteen inches long, covered with leather, to open and shut like a common bellows, but without valves, only a pipe B, about three feet high, is fixed into the bellows at *e*; let water be poured into the pipe at C, which will run into the bellows, and separate the boards a little. Then lay three weights *b, c, d*, each weighing a hundred pounds, upon the upper board; and pour more water into the pipe B, which will run into the bellows, and raise up the board with all the weights upon it; and if the pipe be kept full until the weights are raised as high as the leather, which covers the bellows, will allow, the water will remain in the pipe, and support all the weights upon it; even though it should weigh no more than a quarter of a pound, and these three hundred pounds; nor will all their force be able to cause them to descend and force the water out of the top of the pipe. The reason of this will appear, if we consider that if a hole be made in the upper board; and a tube be put into it, the water will rise in the tube to the same height as it rises in the pipe; and would rise as high by supplying the pipe in as many tubes as the board could contain holes.

Now,

Now, suppose only one hole to be made in any part of the board, of an equal diameter with the bore of the pipe B, and that the pipe holds just a quarter of a pound of water; if a person puts his finger upon the hole, and the pipe be filled with water, he will find his finger to be pressed upward with a force equal to that of a quarter of a pound. As the same pressure is equal upon all equal parts of the board, each part, whose area is equal to the area of the hole, will be pushed upward, with a force equal to that of a quarter of a pound: the sum of all which pressures against the under side of an oval board, sixteen inches broad, and eighteen inches long, will amount to three hundred pounds: and, therefore, so much weight will be raised up and supported by a quarter of a pound of water in the pipe. Hence if a man stands upon the upper board, and blows into the bellows through the pipe B, he will raise himself upon the board; and the smaller the bore of the pipe is, the easier he will be able to raise himself; and then by putting his finger upon the top of the pipe, he can support himself as long as he pleases; provided that the bellows be air-tight. Mr. Ferguson has described another machine, which may be substituted instead of this common hydrostatical bellows: A B C D, *fig. 12*, is an oblong square box, in one end of which is a round groove, as at *a*, from top to bottom, for receiving the upright glass tube I, which is bent to a right angle at the lower end as at *i*, in *fig. 13*, and to that part is tied the end of a large bladder K, which lies in the bottom of the box. Over this bladder is laid the moveable board L, *figs. 12* and *14*, in which is fixed an upright wire M; and leaden weights N, N, to the amount of sixteen pounds, with holes in their middle, are put upon the wire over the board, and press upon it with all their force. The cross bar *p* is then put on to secure the tube from falling, and keep it in an upright position; and then the piece E F G is to be put on, the part G sliding tight into the dovetailed groove H, to keep the weights N, N, horizontal, and the wire M upright, which is received into a round hole *e*, in the part E F. There are four upright pins in the four corners of the box within, each almost an inch long, for the board L to rest upon, in order to keep it from pressing the sides of the bladder below it close together at first. The whole machine being thus put together, pour water into the tube at top, and the water will run down the tube into the bladder below the board, and after the bladder has been filled up to the board, continue pouring water into the tube, and the upward pressure of the bladder will raise the board with all the weight upon it, even though the bore of the tube should be so small, that less than an ounce of water would fill it. Ferguson's Lectures, Supplement, 1767. p. 16.

HYDROSTATIC Instrument, Bradford's, is an invention for weighing money and discovering its defect either of weight or purity.

It consists of a thin flat brass ruler, about half a foot long; on each side of which are two graduated lines, those on the upper side marked A and W (see *Plate X. Hydraulics, fig. 15. N° 1.*) and those on the other side B and W, *ibid. N° 2.* There are also a small chain and pincers wherein to fix the piece of money intended to be weighed and proved, together with two pair of centre pins, marked A and B, *ibid. N° 2* and *3*, being the points of suspension of the rod when used; whereof the former pair A are to be used for proving all pieces of gold under thirty-six shillings value; and the other pair, marked B, for all pieces from thirty-six shillings to seventy-two shillings, or three pounds twelve shillings. Lastly, there is a sliding piece, or index C, *ibid. N° 3*, by the motion of which, backward or forward; until the point

of equilibrium is discovered, the value of any piece suspended in the pincers is found upon the graduated lines already mentioned. Of these lines, those marked A and B are called statical lines, as being calculated for weighing the piece in air, and those marked W W, are called hydrostatical lines, as serving to point out the alloy or adulteration of the piece weighed. A whole division on each line is equal to the weight or value of one shilling in gold; a half division to six-pence, and a quarter division to three-pence.

To prove a guinea: first suspend it in the pincers, and then placing the inside of the sliding-piece C to twenty-one on the line A on the upper side of the ruler, which must move freely on the centre pin marked A, and if the guinea and sliding-piece exactly balance each other, the guinea is full weight; if not, move the slider backwards or forwards until they equiponderate; when the division cut by the inside of the slider is the true weight of the gold; and if it rests for instance, at twenty and a half, then the guinea weighs only twenty shillings and sixpence. In the next place, to prove the alloy of this piece, let the slider be brought to the division twenty and a half, upon the hydrostatical line marked W, for whatever division is cut by the slider in weighing on the statical line, it must be placed at the same on the hydrostatical line adjoining. Then let the piece, together with the pincers, and the brass link whereon it is suspended, be immersed in water (*ibid. N° 3.*) as far as the notch on the said link; if then the instrument acts in equilibrium, or the piece sink deeper in the water, the guinea is standard gold; but if the slider must be moved farther backward before it will equiponderate, the guinea is adulterated. If it is alloyed with silver, allow two shillings for every penny it wants in the hydrostatical weight; and then if the number of pence the piece is deficient in weight hydrostatically, when doubled, exceed the number of shillings it weighs statically, it may be concluded to be adulterated with some baser metal than silver. However, a more speedy method of discovering whether a piece of gold be adulterated or not, without moving the slider more than once, is this: when the piece is weighed statically, bring the slider to the division on the hydrostatical line expressing its weight: and immersing the piece and pincers as before, so that the surface of the water may be exactly at the mark on the long link, if the instrument does not then equiponderate, gently lower the hand that holds the fluid, until the instrument comes to an equilibrium; at which time, if the guinea be a counterfeit, great part of the pincers will appear above the water; if a 36s. piece be tried, not only the pincers, but a small part of the coin, will appear above the surface, if the piece be counterfeit. This last method is sufficiently near the truth for common practice.

If there is occasion to weigh and prove a very small piece of gold, as a *2s. 3d. 4s. 6d.*, &c. the method is, to put the said pieces in the pincers, with some other piece that has been approved before; by which means the weight and alloy of the small piece may be easily discovered, as above. If the piece be above 36s. the slider is to be placed according to the divisions of the statical and hydrostatical lines on the under side of the instrument, which are fitted to the standard of the mint; by which a guinea weighs 129 grains.

HYDROSTATICAL Paradox, is a principle, which has been already stated, and in some degree illustrated and evinced under the article FLUID, and also under the article of **HYDROSTATIC Bellow**s. It is so denominated, because at first view it seems to be paradoxical; but it results from the nature of fluids, which press every way alike. The paradox is this, that any quantity of water, or any other fluid, how small soever, may be made to balance and support any quan-

tity, or any weight, how great soever. Thus, water in a pipe or canal, open at both ends, always rises to the same height at both ends, whether those ends be wide or narrow, equal or unequal. And since the pressure of fluids is directly as their perpendicular heights, without any regard to their quantities, it follows that whatever the figure or size of the vessels may be, provided their heights be equal, and the areas of their bottoms equal, the pressures of equal heights of water are equal upon the bottoms of those vessels; even though the one should contain a thousand or ten thousand times as much as the other. Mr. Ferguson has illustrated and confirmed this paradox by the following apparatus. Let two vessels, (*Plate XI. Hydraulics, fig. 16.*) such as A B and C D, be of equal heights, but very unequal capacity; let each vessel be open at both ends, and their bottoms E and F of equal widths. Let the brass bottoms G and H be exactly fitted to each vessel, not so as to go into them, but for each vessel to rest upon respectively; and let a piece of wet leather be put between each vessel and its brass bottom, for the sake of keeping them close. Join each bottom to its vessel by a hinge D, so that it may open like the lid of a box; and let each bottom be kept up to its vessel by equal weights W, hung to lines which pass over the pulley P, whose blocks are fixed to the sides of the vessels at F, and the lines tied to hooks at d, fixed in the brass bottoms opposite to the hinges D. Things being thus prepared, hold one vessel upright in the hands over a basin on a table, and cause water to be poured slowly into it, till the pressure of the water bears down its bottom at the side d, and raises the weight E; and then part of the water will run out at d. Mark the height at which the surface H of the water stood in the vessel, when the bottom began to give way at d; and then, holding up the other vessel in the same manner, cause water to be poured into it; and it will be seen that when the water rises in this vessel just as high as it did in the former, its bottom will also give way at d, and it will lose part of the water.

The natural reason of this surprising phenomenon is, that since all parts of a fluid at equal depths below the surface, are equally pressed in all directions, the water immediately below the fixed part Bf will be pressed as much upward against its lower surface within the vessel, by the action of the column A g, as it would be by a column of the same height, and of any diameter whatever; and therefore since action and re-action are equal, and contrary to each other, the water immediately below the surface Bf will be pressed as much downwards by it as if it were immediately touched, and pressed by a column of the height A g, and of the diameter Bf; and therefore the water in the cavity B D d f will be pressed as much downward upon its bottom G, as the bottom of the other vessel is pressed by all the water above it. Ferguson's Lectures, p. 105.

HYDROSTATICS, composed of ὑδρῶς, water, and στατική, statics, of στατός, stands, standing, of νησί, sto, I stand, hydrostatics being conceived as the doctrine of the equilibrium of liquors, is the doctrine of gravitation in fluids; or that part of mechanics which considers the weight or gravity of fluid bodies, particularly of water, and of solid bodies immersed in them.

To hydrostatics belongs whatever relates to the gravities and equilibria of liquors, with the art of weighing bodies in water, in order to estimate their specific gravities.

Mr. Boyle has applied hydrostatics to good purpose, in examining and proving the goodness and purity of metals, minerals, and other bodies, particularly fluids, in an express treatise, entitled "Medicina Hydrostatica."

The laws of hydrostatics, with the application of them,

see delivered at large under the articles FLUID and Specific GRAVITY.

Hydrostatics are frequently confounded with hydraulics, on account of the affinity of the subjects; and several authors chuse to treat of the two promiscuously. See HYDRAULICS.

The oldest writer on hydrostatics is Archimedes, who first delivered the laws of them in his book "De insidentibus humido." Marin Ghetaldus first brought his doctrine to experiment, in his "Archimedes Promotus;" and from him Mr. Oughtred took the greatest part of what he has given us on this subject. The celebrated M. Pascal has written an excellent treatise on this subject, entitled "Traité de l'Equilibre des Liqueurs et de la Pesanteur de l'Air." M. Mariotte, in a French treatise, published at Paris in 1686, "Of the Motion of Water and other Fluids," gives most of the propositions of hydrostatics and hydraulics, proved by reason, and confirmed by experiments. The Jesuit F. Tertius de Lanis, in the third tome of his "Magisterium Nature et Artis," lays down the doctrines of hydrostatics more amply than they are elsewhere found. F. Lamy, in the second part of his mechanics, entitled "Traité de l'Equilibre des Liqueurs," delivers the fundamental laws of hydrostatics and hydraulics; and the like is done by Dr. Wallis, in his "Mechanica." Lastly, sir Isaac Newton gives some of the sublimer matters in the second book of his Philosoph. Nat. Princip. Mathematic. For an account of other writers on this science, see HYDRAULICS.

HYDRO-SULPHURET, in *Chemistry*, a compound of sulphuretted hydrogen with alkaline and earthy bases, and likewise with metallic oxyds. The properties of the hydro-sulphurets are: that they are abundantly soluble in water, and are crystallizable; the solution is colourless as long as the action of the air is excluded; but when it is admitted, a yellow colour is soon acquired, owing to the oxygen of the atmosphere combining with the hydrogen of a portion of the sulphuretted hydrogen, while the sulphur combines with the remaining portion of it, forming a super-sulphuretted hydrogen in union with the base. The principal hydro-sulphurets are as follow: viz. 1. Hydro sulphuret of potash: this salt is white, and perfectly transparent, resembling the sulphate of soda by its transparency and the size of its crystals. Its taste is at first alkaline, and afterwards extremely bitter; when dry it is without smell, but when liquid it exhales a fetid odour. It attracts humidity from the atmosphere, and passes into a liquid syrup. When fluid, it gives a green colour to bodies in contact with it; it is soluble in water and alcohol, abstracting heat during the solution: with acids, it gives rise to a brisk effervescence, without depositing any sulphur. It precipitates the metallic solutions: the precipitates from different metals being of different colours and shades. 2. The properties of the hydro-sulphuret of soda are very like those just enumerated of the potash; but the nitrous and oxy-muriatic acids produce a precipitate of sulphur, owing to their decomposing the sulphuretted hydrogen, by affording oxygen to its hydrogen, while the other acids merely expel it. To distinguish the hydro-sulphuret of potash from that of soda; add a few drops of the solution of each to a solution of alumine in sulphuric acid: the potash gives rise immediately to a crystallization of alum; while that of soda has no such effect. 3. Hydro-sulphuret of ammonia is thus produced: when equal parts of sulphuretted hydrogen and ammonia, in their elastic states, are mixed together, they immediately combine; a white cloud is produced, which is condensed, and a thin, soft deposit is formed on the sides of the vessel, which

which exhales a penetrating vapour when exposed to the air : this is the hydro-fulphuret of ammonia.

HYDROTHORAX. See DROPSY.

HYDROTICS, formed of *ὕδωρ*, water, in Medicine. See HYDROPIC.

HYDRUNTUM, OTRANTE, in *Ancient Geography*, the most easterly part of Italy, having a port, from which it was usual to pass over to Greece : the gulf in that place being scarcely 12 leagues broad. Near it was a cape, called "Hydrus Mons."

HYDRUS, or *Water Serpent*, in *Astronomy*, is a southern constellation, including ten stars. See CONSTELLATION.

HYDRUS, in *Zoology*, a genus of serpents lately established by Dr. Schneider, and which is designed to contain a number of those species of the serpent tribe that are of the aquatic kind, whether those which reside in fresh waters, or the marine elements; or such as indiscriminately inhabit either.

Most of the snake tribe possess the power of moving in the water without difficulty, and some, from their peculiar conformation, perform the act of swimming with much facility; but the structure of the hydrus is in an eminent manner adapted to this particular purpose, the tail being broad, flat, and compressed, like that of some kinds of fishes, and by means of which it is enabled to direct its course with equal certainty, and swim with equal ease and swiftness. Water serpents are mentioned by various writers of antiquity, as Aristotle, Ælian, and Pliny, and also by others of the middle ages, as well as those of modern times. Ælian speaks of snakes of large size, with flat tails, produced in the Indian sea, and Aristotle mentions others resembling the conger. It is, therefore, very probable that some few of the genus may have been known to them, though it is not less likely they might have confounded the muræna with their sea serpents, or perhaps even some of the terrestrial kinds of serpents, as the uninformed among the moderns too frequently denominate all those snakes "water snakes" which they happen to discover in the water; without reflecting that those snakes may have only sought shelter in the water in the moment of pursuit, or been discovered in the very instant of time when they have plunged into that element in search of prey.

Bosc, and after him other writers of credit on the tribe amphibia, reject the name of hydrus, given by Schneider; that term having been previously assigned to a tribe of vermes, the polype or hydra of Linnæus. They, therefore, since it appears desirable the genus should be retained, adopt it by the name of *Hydrophis* instead of *Hydrus*, and under this appellation it is received by the best writers at this time. Daudin, it is true, esteems the distinction too diffuse, and with the exception of a few species continued under the name of enhydris, returns the hydrus genus of Schneider to the Linnæan coluber, but his example is not followed by his own countrymen, among whom the three genera, as before mentioned, seem very generally admitted at this period.

It should be distinctly understood that Mr. Schneider does not include the whole of the water serpents under one genus; he considers their residence in the water as the characteristic only of a tribe, which he subdivides into two genera, the first of which he calls *Hydrus*, the other *Enhydris*. In both the form of the tail is alike, flat, broad, and formed for swimming, but in the shape of the scales and some other particulars they differ materially, those of the hydrus corresponding with the viper (coluber), and the enhydris with the snake (anguis). A third genus is constituted by still later naturalists of the Hydrus colubrinus of that author, under the name of *Platurus*, this species being furnished by nature with venomous fangs like the poisonous kinds of snakes. The

genus last adverted to was supposed to consist only of a single species, but we find among the Indian serpents described by Dr. Ruffel, some other poisonous kinds, which perhaps belong to this particular genus.

Species.

* Genus *Hydrus*, Schneider. *Hydrophis*.

LATICAUDA. Pale yellowish, with transverse brown bands; tail pointed. *Anguis laticauda*, Linn. *Hydrus fasciatus*, Schneider. *Tatta Pam*, Ruffel.

The form of this species is long and slender; the head small, not broader than the neck, and covered with large scales; the neck cylindrical; the back carinated; sides declining, and belly roundish. The scales on the trunk, tail, and belly are orbicular, close and not imbricated; those on the under part of the body amount to two hundred, and are placed in two rows; those beneath the tail fifty; the teeth small. Schneider supposes this may be of the poisonous kind, as he observed a large curved fang-like tooth on each side, concealed as it were in a kind of sheath. The specimen described by Dr. Ruffel was found on the sea beach at Vizagapatam, and appeared very alert in its motions, yet when put into a vessel of sea-water to be preserved alive, in order to ascertain the effects of its bite, it very soon died. The length of this was about two feet; according to Schneider it grows to a much larger size.

BICOLOR. Body above black, beneath yellowish; tail spotted with black. *Hydrus bicolor*, Schneider. *Anguis platura*, Linn. *Nixboa Quanquecolla*, Seba. *Nalia Wablagillee Pam*, Ruffel.

A native of the Indian seas, and said by Forster to be very common near the coasts of the island of Otaheite, where it is called by the natives *Etoona-toree*, and constitutes an article of food; it is about two feet six inches long, and feeds on fish and molluscous animals, which, according to Forster, it seizes with the utmost address. The same species is found in various parts of the Pacific ocean.

CÆRULEUS. Blue, with numerous yellow bands. *Shootur*, Ruffel.

Length three feet and a half; abdominal scales three hundred and thirty-two; caudal forty. Native of India.

MAJOR. Livid, with brown decurrent bands, and hexagonal abruptly carinated scales. Shaw.

Described from a specimen in the British Museum. Its length is more than three feet; its colour pale or livid, marked throughout the whole length of the back by a series of large transverse, semi-current dusky bands; the tail banded more deeply. The length of the tail is about four inches, and the scales which cover it are of a somewhat square or lozenge form, and so disposed as to resemble in some degree those of a fish; they are all marked by an abrupt middle carina; the scales on the body are chiefly hexagonal, and are carinated in the same manner. It appears to be of the poisonous kind, as one of the teeth on each side in the upper jaw is larger than the rest, and on being examined with a lens is evidently tubular, the slit towards the end being much longer in proportion than in that of the rattlesnake. The species is a native of the Indian seas.

GRACILIS. Anterior part of the body slender, and covered with smooth ovate scales; the posterior end thicker, and covered with smooth abruptly-carinated hexagonal scales. Shaw.

Length two feet; head very small, and not of greater diameter than the neck; the tail about an inch and three-quarters in length, colour uncertain, but appears to have been banded all along the upper parts, from the head to the tail.

HYDRUS.

tail, with numerous, equidistant, brown, and somewhat obtusely pointed bands reaching almost to the abdomen, those on the small or cylindrical part of the body being continued into annuli.

CÆRULESCENS. Blueish with dusky blue decurrent bands, and white abdomen. Shaw.

A native of the East Indies, the length two feet; in appearance resembles *Hydrus major*, but the abdomen has a single and perfectly undivided row of hexagonal scales, from the throat to the beginning of the tail, of about the length of an inch in diameter, and forming a carina on that part; back marked by a carina also; tail two inches and a quarter long, and moderately broad. Colour above pale livid blue, beneath white, and marked throughout its whole length by decurrent bands of deeper blue.

CURTUS. Short, yellowish, with dusky decurrent sub-acuminated bands, somewhat confluent above. Shaw.

A native of the East Indies; the length one foot, the body compressed, and considerably thicker in proportion to its length than the species *cærulescens*; the head flattish; neck and anterior part but little thinner than the rest of the body; tail about an inch long, and of the usual form; back and abdomen carinated, the carina of the latter more obtuse. The general colour is pale yellow, with a pretty close series of deeply decurrent dusky bands from head to tail, and which are so disposed as to appear alternately confluent on the upper part of the back, more especially near the head. Described from a specimen in the British Museum.

SPIRALIS. Yellowish, with brown bands longitudinally confluent beneath; the body spirally contorted. Shaw.

An elegant species, of a slender form, and about two feet in length, the body much compressed throughout; the dorsal carina very acute, that of the abdomen with a flattened edge of scales somewhat wider than the rest, and about the fifteenth of an inch in diameter; the head small; mouth wide; scales on the head large, those on the body moderately small, ovate, and slightly carinated. The general colour is yellow, with bars of deep chestnut brown, each dilating on the abdomen; and the back from about the middle nearly to the tail is marked with a series of large, round, blackish spots. "The most remarkable circumstance in this snake (says Dr. Shaw) is the singular obliquity of its form; the body in different parts being alternately flatter on one side than the other, and the pattern completely expressed on the flattened side only; the other, or more convex side, being unmarked by round spots, and lying as it were beneath; thus constituting several alternate spiral curves." Gen. Zool.

** Genus *Enhydris*.

CASPIUS. Cinereous olive with four rows of orbicular black spots disposed in quincunx order down the back; abdomen yellow, tessellated with black. *Coluber hydrus*, Pallas.

Inhabits the Caspian sea and also the Rhine, the length about three feet; tail almost black, and terminated by a small double point, one beneath the other. The head is small; the eyes surrounded by a yellow circle; teeth numerous, small, and placed in two rows; the tongue very long and black.

ATROCÆRULEUS. Black blue; abdomen yellow, with a central longitudinal line of blue. *Hydrus enhydris*, Schneid. *Mutta Pam*, Ruffel.

Described by Dr. Ruffel as being about twenty inches in length, the colour dark blue and changeable; the yellow of the abdomen inclining to white; head small and covered with large scales; anterior part of the body slender, the

circumference of the trunk, in the thickest part, about two inches and a quarter; and the tail short, small, taper and compressed. The specimen mentioned by Dr. Ruffel was taken in an Indian lake called Ankapilly in one of the traps placed there for catching eels. It is supposed to be harmless, having no visible fangs.

CINEREUS. Ash colour; snout broad, obtuse, and black; abdomen yellowish. *Hydrus rynchops*, Schneider. *Karoo Bokadam*, Ruffel.

Inhabits India; the length three feet and a half, the thickness near the head three inches; in the middle of the body four inches and a half; the snout projecting, broader than the neck, and forming a kind of beak which is covered with small laminae, the remainder of the head, with the whole of the upper parts, beset with ovate or sub-orbicular carinated scales; eyes small and vertical; mouth moderate; teeth close set, small, irregular, and not reflex. Colour of the scaly part of the snout pale cinereous. Tail rather compressed, eight inches in length, somewhat tapering, and obtuse at the end.

PISCATORUS. Yellowish brown, with numerous round black spots united by black lines, and disposed in oblique rows. *Hydrus piscator*, Schneider. *Neeli Koca*, Ruffel.

Length two feet nine inches; circumference three inches and a half; head rather broad, ovate, and somewhat depressed, with the sides compressed; covered with large scales; tail eleven inches in length, slightly carinated, tapering very gradually, and terminating acutely; the abdomen yellowish white. The species is a native of India, and is esteemed a water snake, as it frequents the wet paddy fields; it moves swiftly, and carries its head high, with a menacing air, but is not a poisonous species, and cannot easily be irritated. When provoked it would neither hiss nor snap at a stick presented to it; nor was it provoked to bite a chicken though pecked several times by the animal. It is known to feed on fish.

PALUSTRIS. Brownish yellow, with rhomboid brown spots edged with black; abdomen pearl colour; tail above reddish white. *Hydrus palustris*, Schneider. *Paragoodoo*, Ruffel.

Resembles the last; the length more than two feet; trunk round; head broadish, oblong, and covered with large scales; tail round, about five inches and a half long and very taper; between each of the oblique rows of brown rhomboidal spots is a ferruginous line, the whole having a decussated appearance; the tail plain and immaculate. According to Dr. Ruffel, this species is not uncommon in India, frequenting the damp grounds, and the borders of tanks, and growing to a size much superior to the former.

DORSALIS. Dirty white, with a dorsal black band sinuated at the edges. *L'Enhydre dorsale*, Bosc.

The length about one foot; head ovoid; abdomen carinated. Country unknown.

*** Genus *Platurus*. Armed with venomous Fangs.

FASCIATUS. Lead colour, with broad black surrounding bands. *Coluber laticaudatus*, Linn. *Hydrus colubrinus*, Schneider. *Platurus fasciatus*, Latreille.

Native of the Indian and American seas; its general length two feet six inches, or more; the head is covered with large scales; the body cylindrical; tail flattened and somewhat dilated at the tip. This is a poisonous serpent, but the fangs are remarkably small in proportion to the size of the creature.

LANCEOLATUS. Back blue, under the belly yellowish; tail lanceolate and entirely blue.

A native of the Indian seas, and is called by the inhabitants

ants in the English settlements Hoglin; it is two feet and a half in length; the series of abdominal scales three hundred and six, and those of the tail forty-eight. This and the following species are extremely dangerous, their bite proving mortal in a few minutes.

ALBUS, White with numerous blue bands; tail obtuse.

Described by Dr. Russel as a native of India, under the name of Chittul. The length is three feet, the number of abdominal scales is three hundred and eight; and those of the tail forty-eight.

HYELA, in *Ancient Geography*, a river of Asia, in Bithynia, called by Pliny *Hylas*.—Also, a town of Arabia Felix. Ptol.

HYELLA, a maritime town of Magna Græcia, in Lucania, called also *Hyalé*. Strabo.

HYELLIUM, a town of Asia, in Phrygia, upon the Meander.

HYEMAL SOLSTICE, the same with *winter solstice*. See **SOLSTICE**.

HYEMANTES, in the *Primitive Church*, offenders who had been guilty of such enormities, that they were not allowed to enter the porch of the churches with the other penitents, but were obliged to stand without, exposed to all the inclemency of the weather.

HYES, in *Mythology*, a surname given to Bacchus, from the name Hye given to his mother Semele: or, according to others, because her feast commonly happened in a rainy season; from *ὕεω*, to rain. The Athenians worshipped Jupiter under the character Pluvialis, and erected an altar to him on mount Hymetta.

HYETUSSA, in *Ancient Geography*, a small island situated on the coast of Ionia, over-against the mouth of the Meander, and south of the promontory of Trogilium.

HYGEIA, or **HYGIEIA**, in *Mythology*, an epithet given to Minerva, as the goddess of health. Hygieia was represented as one of the four daughters of Esculapius. She often accompanies her father in the monuments of him now remaining, and appears like a young woman, commonly holding a serpent in one hand, and a patera in the other; sometimes the serpent drinks out of the patera; sometimes he twines about the whole body of the goddess.

HYGIEINE, *Ἑγίειν*, formed of *ὑγιής*, sound, healthy, that branch of medicine which considers *health*, and discovers proper means and remedies, with their use in the preservation of that state.

The objects of this branch of medicine are, the non-naturals. See **AIR**, **DIET**, **EXERCISE**, &c.

Hygieine, more largely taken, is divided into three parts; *prophylactice*, which foresees and prevents diseases; *syntheritice*, employed in preserving health; and *analeptice*, whose office is to cure diseases, and restore health.

HYGINUS, pope, in *Biography*, is thought to have been a native of Athens, flourished in the second century, and was brought up as a philosopher by profession. He was elected to the office of bishop of Rome upon the martyrdom of Telephorus about the year 140, and filled it till his death, which took place three years after. He was the zealous opponent of the doctrines propagated at that period by Valentine and Cerdo, but could not prevent them from making considerable progress. He settled and confirmed the several orders and degrees of the clergy; ordained the solemn consecration of churches, and did many other acts which were regarded, at that period, as of great importance to the interests of the prevailing religion. Moreri.

HYGINUS, CAIUS JULIUS, one of the ancient grammarians, is mentioned by Suetonius as a native of Spain, though some have supposed him an Alexandrian, and to have

been brought to Rome after the capture of that city by Julius Cæsar. He was appointed keeper of the Palatine library, and received pupils for instruction. He was intimately acquainted with Ovid and other literary characters of the age; he was said to be the imitator of Cornelius Alexander, a Greek grammarian; wrote the lives of illustrious men, which are referred to by Aulus Gellius; a volume of examples, and a copious treatise on the cities of Italy. Other works have been attributed to him: but the only pieces that have come down to us, are entitled "Poeticon Astronomicon, de Mundi et Spheræ, ac utriusque Partium, Declaratione, lib. iv." and a book of fables. The best edition of these works in conjunction is contained in Munker's "Mythographi Latini." Gen. Biog.

HYGRA, of *ὑγρός*, moist, a name given by the ancients to what they called liquid plasters, in opposition to those called xeria, or dry ones. These first were a sort of liniments.

HYGROCIRSOCELE, compounded of *ὑγρός*, moist, and *κίρκουρα*, *ramex varicosus*, in *Medicine*, a branch of a vein swelled with ill blood, or other humours; or a varicose tumour of some of the veins of the testes, attended with a gathering of water in the scrotum.

HYGROMETER, or **NOTIOMETER**, compounded of *ὑγρός*, moist, and *μέτρον*, *I measure*, a machine, or instrument, whereby to measure the degrees of dryness, or moisture, of the air. It is also called *Hygroscope*. See the next article.

HYGROMETRY is the term used by Lambert, Saussure, and other writers to denote the science concerning the nature and quantity of aqueous vapour in the atmosphere, and its relation to certain instruments called *hygrometers*. This branch of meteorology has been greatly improved of late years, and is justly considered of importance, as being intimately connected with *hygrology*, or the science of aqueous meteors in general.

The two great objects of hygrometry are, 1st, To find what quantity of water exists in solution, or in an elastic state, in a given volume of the atmosphere, or, which is still better, in a given perpendicular column reaching to its summit; and, 2dly, To ascertain the disposition of the atmosphere on any occasion to deposit water or to absorb it, or, in more familiar language, its disposition to rain or to be fair.

The earlier philosophers had the second object chiefly in view, on account of the more immediate benefit which seemed likely to be derived from the knowledge of it; but latterly both objects have engaged the attention of those who have pursued this branch of physical investigation. Various means have been applied and instruments used under the name of hygrometers or hygrosopes, to indicate the fluctuations of moisture existing in the atmosphere. The detail of experimental enquiry may be conveniently digested under five heads; namely, 1. The alternate expansion and contraction of animal and vegetable substances, by dryness and moisture. 2. The quantity of water absorbed from the air by chemical agents having an affinity for it. 3. The quantity of water evaporated under given circumstances. 4. The cold produced by the evaporation of water; and, 5. The dew-point; or that point of temperature at or below which dew is deposited from the atmosphere upon glass or any other smooth substance.

1. *On the Expansion and Contraction of Animal and Vegetable Substances by Dryness and Moisture*.—It has been long known that animal and vegetable substances of different kinds are subject to contraction and dilatation by moisture and dryness. Mr. Boyle made experiments on ropes, by suspending weights of 50 or 100 lb. to them, which he found were raised

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and lowered alternately by the moisture and dryness of the air. Amongst the hygrometrical substances of this kind, that have been more or less noticed, may be reckoned ropes and cords of various kinds, such as whip-cord, catgut, &c., wood, particularly deal, ivory, whalebone, hair, beard of a wild cat, and several other vegetable productions, &c. If these bodies retained the property of being affected by moisture undiminished, they would form comparable instruments for hygrometers or rather hygroscopes; but unfortunately they all in time become less sensible than at first.

We shall here give in brief detail an account of the manner in which hygrometers, consisting of the above-mentioned materials, have been constructed.

Stretch a hempen cord or a fiddle-string, as *AB* (*Plate XII. Hydraulics, fig. 1.*) along a wall, bringing it over a truckle or pulley *B*, and to the other extreme *D* tie a weight *E*, into which fit a style, or index, *FG*. On the same wall fit a plate of metal *HI*, divided into any number of equal parts, and the hygrometer is complete.

For it is a matter of undoubted observation, that moisture sensibly shortens the length of cords and strings; and that as the moisture evaporates they return to their former length; and the like may be said of a fiddle-string. The weight, therefore, in the present case, upon an increase of the moisture of the air, will ascend; and upon a diminution of the same, it will descend.

Hence, as the index *FG* will shew the spaces of ascent and descent, and those spaces are equal to the increments and decrements of the length of the cord or gut *ABD*, the instrument will discover whether the air be more or less humid now than it was at another given time.

Or thus: if a more sensible and accurate hygrometer be required, strain a whip-cord, or fiddle-string, over several truckles, or pulleys, *A, D, E, F,* and *G* (*fig. 2.*), and proceed with the rest as in the former example. Nor does it matter whether the several parts of the cord *AB, CD, DE, EF, FG,* be parallel to the horizon, as expressed in the present figure, or perpendicular to the same. The advantage of this, above the former hygrometer, is, that we have a greater length of cord in the same compass; and the longer the cord, the greater its contraction and dilatation.

Or thus: fasten a twisted hempen cord, or fiddle-string, *HW*, by one end, sustaining a weight *W* (*fig. 3.*) to an iron hook; and let the other end descend upon the middle of an horizontal board, or table, *AB*, and fit an index *I*. Lastly, from the centre *B* describe a circle; which divide into any number of equal parts.

Now, it is matter of observation, that a cord or gut twists itself as it is moistened, and untwists again as it dries. Mr. Molyneux, secretary of the Dublin society, writes, that he could perceive this alternate twisting and untwisting in a cord, by only breathing on it eight or ten times, and then applying a candle towards it. Hence, upon an increase or decrease of the humidity of the air, the index will shew the quantity of twisting or untwisting; and, consequently, the increment or decrement of humidity, or dryness.

Or thus, fasten one end of a cord or fiddle-string, *HI*, (*fig. 4.*) to a hook *H*; and to the other end fasten a ball *K*, of a pound weight. Draw two concentric circles on the ball, and divide them into any number of equal parts; fit a style, or index, *NO*, into a proper support, *N*, so as the extremity *O* may almost touch the divisions of the ball.

Here the cord or gut twisting or untwisting, as in the former case, will indicate the change of moisture, &c. by the successive application of several divisions of the circles to the index.

Or thus: provide two wooden frames, *AB* and *CD*, (*fig. 5.*) with grooves in them; and between these grooves fit two thin leaves of ash, *A E F C* and *G B D H*, so as they may easily slide either way. At the extremes of the frames *A, B, C, D*, confine the leaves with nails, leaving between them the space *E G H F*, about an inch wide. On *I* fasten a slip of brass dented, *IK*; and in *L* a little dented wheel, upon whose axis, on the other side of the machine, an index is to be put. Lastly, from the centre of the axis, on the same side, draw a circle, and divide it into any number of equal parts.

Now, it being found by experience, that ash wood readily imbibes the moisture of the air, and swells with it; and as that moisture slackens, shrinks again; upon any increase of the moisture of the air, the two leaves *A F* and *B H*, growing turgid, will approach nearer each other: and, again, as the moisture abates they will shrink, and again recede. Hence, as the distance of the leaves can neither be increased nor diminished without turning the wheel *L*, the index will point out the changes in respect of humidity and dryness.

It is to be noted, that all the hygrometers above described become sensibly less and less accurate; and, at length, undergo no sensible alteration at all from the humidity of the air. The following is much more lasting; though no hygrometer will serve for years, like a barometer and thermometer; but whatever be the substance of which it is made, will be so altered as to become in a great degree useless.

Take the manoscope described under that article, and instead of the exhausted ball *E*, (*fig. 6.*) substitute a sponge, or other body which easily imbibes moisture. To prepare the sponge, it may be necessary to wash it first in water; and when dry again, in water or vinegar, wherein sal ammoniac, or salt of tartar, has been dissolved, and let it dry again.

Now, if the air become moist, the sponge, growing heavier, will preponderate; if dry the sponge will be hoisted up, and, consequently, the index will shew the increase or decrease of humidity of the air.

In the last mentioned hygrometer, Mr. Gould, in the Philosophical Transactions, instead of a sponge, recommends oil of vitriol, which is found to grow sensibly lighter or heavier, in proportion to the lesser or greater quantity of moisture it imbibes from the air; so that being satiated in the moistest weather, it afterwards retains or loses its acquired weight, as the air proves more or less moist. The alteration in this liquor is so great, that in the space of fifty-seven days it has been known to change its weight from three drachms to nine; and has shifted an index or tongue of a balance thirty degrees. A single grain, after its full increase, has varied its equilibrium so sensibly, that the tongue of a balance, only an inch and a half long, has described an arch one-third of an inch in compass; which arch would have been almost three inches, if the tongue had been one foot, even with so small a quantity of liquor; consequently, if more liquor, expanded under a large surface, were used, a pair of scales might afford as nice an hygrometer as any kind yet invented. The same author suggests, that oil of sulphur per campanum, or oil of tartar per deliquium, or the liquor of fixed nitre, might be substituted in lieu of the oil of vitriol.

This balance may be contrived two ways; by either having the pin in the middle of the beam, with a slender tongue, a foot and a half long, pointing to the divisions on an arched plate; as represented in *fig. 6*:

Or, the scale with the liquor may be hung to the point of the beam near the pin, and the other extreme be made so long,

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long, as to describe a large arch on a board placed for the purpose, as represented in *fig. 7.*

Mr. Arderon has proposed some amendment in the sponge hygrometer. He directs the sponge *A* (*fig. 8.*) to be so cut as to contain as large a superficies as possible, and to hang by a fine thread of silk, upon the beam of a balance *B*, and exactly balanced on the other side by another thread of silk at *D*, strung with the smallest lead-shot, at equal distances, so adjusted as to cause an index *E*, to point at *G*, the middle of a graduated arch, *F G H*, when the air is in a middle-state, between the greatest moisture and the greatest dryness. Under this silk so strung with shot, is placed a little table or shelf *I*, for that part of the silk and shot which is not suspended to rest upon. When the moisture imbibed by the sponge increases its weight, it will raise the index, and also part of the shot, from the table, and *vice versa* when the air is dry. *Phil. Trans. N^o 479. vol. xlv. p. 96.*

From a series of hygroscoptic observations, made with an apparatus of deal wood, described in the Philosophical Transactions, N^o 480, Mr. Coniers concludes, 1. That the wood shrinks most in summer, and swells most in winter, but is most liable to change at spring and fall. 2. That this motion happens chiefly in the day-time, there being scarcely any variation in the night. 3. That there is a motion even in dry weather, the wood swelling in the morning, and shrinking in the afternoon. 4. The wood, by night as well as day, usually shrinks when the wind is in the north, north-east, and east, both in winter and summer. 5. That by constant observation of the motion and rest of the wood, with the help of a thermometer, one may tell the situation of the wind without a weather-cock.

He adds that the time of the year may be known by it; for in spring it moves quicker and more than in winter; in summer it is more shrunk than in spring; and has less motion in autumn than in summer.

See an account of the method of constructing these and other hygrometers in Lowthorp's Abridg. *Phil. Trans. vol. ii. p. 30, &c. and plate 1. annexed. See also Phil. Trans. vol. xliii. N^o 473. p. 6, &c. vol. xlv. p. 169, and p. 184.*

Dr. Hooke's hygrometer was made of the beard of a wild oat, set in a small box, with 2 dial plate and an index. See his *Micrographia*, p. 150, &c.

An hygrometer of this kind may be constructed in the following manner. Let *A B C D* (*fig. 9.*) be a square brass plate, about four inches square, with a ring or circle fixed to it, graduated on the flat and the inner edge. *I C* represents a very light index of brass or steel, with a small cylindrical lump in its centre, into which is fastened the top of the beard of a wild oat, by a little peg, and the other end of it in another lump, about an inch under the plate, which, having a little hole under *C*, allows the beard of the oat to come through, in order to carry the hand, and yet keep it in its place, without hindering it to twist and untwist. There are also two wires coming down under the middle of the plate, which hold a little cross bar, making a small frame to carry the lump that holds the bottom of the beard exposed to the air. The four feet of this instrument, two of which are seen at *C, D*, must be about one inch and a quarter long, to keep the frame under the plate from touching any thing which the instrument is set upon. *AB*, in *fig. 10*, represents the plate, *F* and *F* two of its feet, *C* and *D* the little lumps to which the wild oat-beard, *C D*, is fastened; *e f* and *g h* the wires supporting the piece *f h*, and all together form an open frame, to hold the lump *D*. The beard passes through the hole *i*, in order to carry the index *I i*, which points to the degrees on the graduated circle *A B*.

The following hygrometer was contrived by Dr. Hales and Defaguliers. *P c p w C*, (*fig. 11.*) is a piece of lignum vitæ, cylindrical at *C w P*, but from *C w* to *p* a truncated cone, and screwed like the fuzee of a watch, but not so taper. The length of the instrument is about a foot, the cylindrical part an inch in diameter, and half an inch long; the large part of the screw about three quarters of an inch, and the small part half an inch; at each end there are fine steel pivots, bearing on two fine conic holes in brasses in the frame that carries the instrument, that it may turn easily. A sponge, *S*, hangs by a silk from the cylinder of the instrument, so as to turn it by its rising or falling; a weight *W*, hanging from another silk *u*, coiled upon the screw *C p*, keeps the sponge in equilibrio. When the sponge becomes heavier, by imbibing moisture from the air, it runs down, and draws up *W*; but as *W* comes up, its strings must advance towards *C w*, where, hanging farther from its centre, its power will be so increased, that it will keep the sponge in equilibrio, though its weight be increased. But as the weight rises, it will shew on the scale, *D D*, how much the sponge is heavier, and consequently the air moister. This instrument will be made still more sensible, when its pivots are supported by four friction wheels. Salt of tartar, or any other salt, or pot-ashes, may be put into the scale of a balance, and used instead of the sponge. *Defag. Exp. Phil. vol. ii. p. 300.*

In an hygrometer invented and described by Mr. Ferguson, *A A A A* (*fig. 12.*) is a frame of wainscot or mahogany, grooved in the longest sides, to hold the pannel *B B B B* of white deal board, without pinching it. The pannel is about the thickness of a crown-piece, and fifteen inches long cross-wise to the grain of the wood. The middle part projects at *C* and *C*, where it is fastened into the frame by two screws; so that this part always remains in the same place, whilst the rest of the pannel expands by moist air towards both ends of the frame, and contracts towards the middle, when the air is dry. To a pin at *F* is fastened one end of a small flexible cord *D E*, and the other end goes round the pulley *G*, and is fixed into the bottom of its groove at *b*. One end of another small cord, *I K*, is fixed into the groove of the large pulley *H*, at *a*, going round the part *a i H*, and passing round to *M*, round a small pulley *L*, the axis of which turns in the piece *O*, lying above it, and screwed to the frame at *C*. To the end of the cord is suspended a flatish weight *N*. The diameters of the pulleys *G* and *L* are equal, and about one-tenth of the diameter of *H*. The distance of the pulleys *G*, and pin *F*, will determine the expansion of the pannel between *F* and *G*: which will cause the pulley, *G*, to turn backward, and any point in *H* ten times as much; and in this proportion will the weight *N* be raised: therefore, if the pannel extend one-tenth of an inch by moist air, the pulley *L* will be turned quite round. As the air grows dry, the pannel contracts, the weight *N* descends, and turns all the pulleys the contrary way. The back of the plate *A A*, (*fig. 13.*) is screwed to the other side of the frame, so that the straight edge of the plate may be even with the uppermost side of the frame, and the centre *B* may be directly over the centre of the pulley *L* (*fig. 12.*), on whose axis the index *B C* (*fig. 13.*) is fixed, which, by moving on the graduated edge of the plate, indicates the moisture or dryness of the air. The pannel should be changed in three or four years. (*Phil. Trans. vol. liv. art. 47.*) Mr. Smeaton has given the construction of an hygrometer of cord: it is, doubtless, the best that has been published constituted of that substance.

Mr. Smeaton's hygrometer is exhibited in (*Plate XIII. figs. 1 and 2.*) *A B C* (*fig. 1.*) is an orthographic delineation of the whole instrument seen in front, with the box-cover *H*, which descends

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defends the index, &c. from injury, and by a glass exposes the scale to view. FG in both figures represents a flaxen cord, about 35 inches long, suspended by the turning peg F, attached to a loop of brass wire at A. This cord is that which is called by net makers in London *flaxen three-threads laid*, and is between one 20th and one 30th of an inch in diameter. It is previously boiled in a solution of two penny-weights troy of common salt in one pound avoirdupoise of water, boiled till the whole is reduced to six ounces avoirdupoise. The cord soaked in this brine is dried, and then stretched, by tying three or four yards of it to two nails against a wall, in a horizontal position, and hanging a weight of a pound or two to the middle. When it has remained in this position for a week or more in a room, it will be fit for use. G, I, (*fig. 2.*) are two loops, or long links of brass-wire, laying hold of the index KL, which is moveable on a small stud or centre K. The cord FG is kept moderately strained by a weight M, about half a pound avoirdupoise. As the cord lengthens or shortens, the end of the index passes over the scale NQ, disposed in the arc of a circle, and containing 100 equal divisions. This scale is attached to the brass sliding ruler QP, which moves upon the directing piece RR, fixed by screws to the board, which makes the frame or base of the whole; and the scale and ruler, NQP, are retained in any place nearer to or farther from the centre K, by the screw S. *Fig. 3.* represents in profile the sliding piece and stud I, which traverses on that part of the index next the centre K; and which can, by the two screws of the stud, be retained upon any part of the index that is made parallel, and which is done for three or four inches from the centre, for that purpose. The stud is filed to the edges like the fulcrum of a scale-beam, one being formed on the under-side, and the other upon the upper, as near as possible to one another. A hook formed at the lower end of the wire loops, G, I, retains the index by the lowermost end of the stud, while the weight M hangs by a small hook upon the upper edge. By these means the index is kept steady, and the cords strained by the weight, with very little friction or burthen upon the central stud K. *Fig. 4.* is a parallelogram of plate brass to keep out dust, which is attached to the upper edge of the box-cover H, and serves to shut the part of the cover, necessarily cut away, to give leave for the wire, G, I, to traverse with the sliding stud (*fig. 3.*) nearer to or farther from the centre of the index K. In this (*fig. 4.*) there is a hole *a*, about one-fifth of an inch diameter, for the wire G, I to pass through, in the motion of the index, without touching; *b* is a slit of a lesser size, sufficient for the wire to pass, and allow the cover to come off without deranging the end of the index; *c, c,* are two small screws applied to two slits, by which the plate slides lengthways, in order to adapt the hole *a* to the wire G, I, at any place of the stud I, upon the index K, L. This index is 12 inches long, four inches of which, from the extreme end, are filed so narrow, that any part of them may serve for an index to the divisions of the scale; the scale itself also slides four inches. The directing piece, R, R, is parallel to a line drawn from *o* upon the scale to the centre, K, of the index; consequently, as the attenuated part of the index forms a part of a right line drawn from the same centre, whenever the index points to *o* upon the scale, though the scale be removed nearer to or farther from the centre of the index, yet it produces no change in the place to which the index points. When the divided arc of the scale is at 10 inches from the centre, which is its mean distance, then the centre of the arc and the centre of the index are coincident. At other distances, the extremes of which are eight or 12 inches, the centre

of the divisions, and the centre of the index, pointing to them, not being coincident, the index cannot move over spaces geometrically proportionable to one another in all situations of the scale; yet the whole scale not exceeding 30 degrees of a circle, it will be found, on computation, that the error can never be so great as $\frac{1}{100}$ th part of the scale, or one degree of the hygrometer.

For adjusting the instrument, take off the box-cover, and set the instrument nearly upright about a yard from a moderate fire; there let it remain, till the index sinks as low as it will go, stroking the cord occasionally between the thumb and finger downwards. When it is become stationary, raise or depress the index by means of the peg at top, till it lies over the point *o*; then remove the instrument from the fire, and with a camel-hair pencil dipped in warm water, moisten the cord, without suffering any drops of wet to fall from it till it is saturated, and the index becomes stationary. If the index lies over the degree marked 100, all is right; if not, slacken the screw S, and slide the scale nearer to or farther from the centre, till the point 100 come under the index, and the instrument is adjusted for use. The intermediate space must then be divided into equal parts. The adjustment may be repeated two or three times a year, or as often as may be judged necessary to adapt the scale to the existing capacity of the cord. If the compass of the slide be not sufficient to effect this, slacken the proper screws, and move the sliding stud I nearer to or farther from the centre of the index, as the angle, formed by the index between the points of dry and wet, happens to be too small or too large for the scale. Mr. Smeaton was led by observation to mark the point of 0 *dry*, 20° *the mean*, 40° *moist*, 70° *very moist*, and 100° *wet*. Phil. Transf. vol. lxi. part i. art. 24.

Other instruments of a more delicate and portable nature have since been invented. We may form an idea of the slow and gradual manner by which a cord of this kind loses its power, by the result of a series of experiments made by Mr. Dalton, and published in his Meteorological Essays, 1793. A piece of whip-cord, six yards long, was hung up in a room and thrown over a pulley; it was then stretched by a weight of three ounces for some months; after which an index and a scale of inches and decimals were attached to the end having the weight. A regular series of observations were made on it three times a day for two years, and once a day for three succeeding years. The room was without fire, but airy.

The results are below: the higher numbers denote greater dryness, all other circumstances being the same.

| | 1788 | 1789 | 1790 | 1791 | 1792 |
|--------------|------|-------|-------|-------|-------|
| Annual means | 9.33 | 10.77 | 11.21 | 11.59 | 11.92 |
| Driest - - | 13.8 | 14 | 14.1 | 14.4 | 15 |
| Moistest - - | 1.5 | 6.3 | 7.1 | 6.5 | 8.3 |

The general monthly means for the five years were,

| | | | | | |
|-----------|---|---|---|---|-------|
| January | - | - | - | - | 7.93 |
| February | - | - | - | - | 8.52 |
| March | - | - | - | - | 10.27 |
| April | - | - | - | - | 11.39 |
| May | - | - | - | - | 12.38 |
| June | - | - | - | - | 13.10 |
| July | - | - | - | - | 12.42 |
| August | - | - | - | - | 12.68 |
| September | - | - | - | - | 11.72 |
| October | - | - | - | - | 11.15 |
| November | - | - | - | - | 10.2 |
| December | - | - | - | - | 9.75 |

Hence

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Hence it appears that a cord, in these circumstances, increases every year in length, but less and less each year, and that the range of variation diminishes each year. The quantity, however, is such as to render instruments of Smeaton's construction occasionally adjusted very comparable.

Another still more simple form of this sort of hygrometer consists of a short piece of cord or cat-gut, from four to ten inches, suspended by a hook over a horizontal board; to the lower end of the cord is fixed a horizontal index having a circular graduated scale on the board. As the cord attracts moisture or the contrary, it twists or untwists, and thereby turns the index. On this principle, the Dutch toys, called weather-houses, are made; one end of the index supports a small image of a man, and the other that of a woman; the former appears, or is brought out, in wet weather, and the latter in fair weather.

M. de Luc some time ago constructed an hydrometer of ivory. The part of his hygrometer which is affected by the moisture of the air, is a hollow tube of ivory *aab* (fig. 5.) two inches eight lines long, and internally two lines and a half in diameter. This tube is open at the end *aa*, and closed at *b*, terminating in a point; and the thickness of its sides, for the length of two inches six lines from the bottom, is but three sixteenths of a line: it is this thin part which does the office of an hygrometer; the remaining part of the cylinder, towards its orifice *aa*, must be kept a little thicker, in order to bear the pressure of a tube of glass, about fourteen inches long, the lower end of which is seen at *dee*. The internal diameter of this tube is about three-eighths of a line, and the outside diameter about two lines, in order that the part *gg* of a brass piece *ffgg*, through which it passes, and which is to enter into the ivory pipe, be as thick as possible. In order to hinder that part of the tube which incloses the brass piece from being affected by the variations of moisture, it is covered with a brass ferril *bbii*. These pieces are united together with gum lac or mastich, which melts by the heating of the glass and brass. M. de Luc's reason for chusing ivory for his hygrometer, is, that this matter appeared to him more proper than any other for receiving the impression of the moisture of the air, without suffering thereby any material change. The cylinder made of it becomes more capacious, in proportion as it grows moister; and this is the fundamental principle of the instrument. M. de Luc has also found, that upon letting this cylinder lie for some time in water of an uniform temperature, it swells to a certain point, after which it dilates no farther. This circumstance furnished him with a *maximum* of humidity; and, consequently, with one point of comparison in the scale of the hygrometer; and this point he has fixed at the temperature of melting ice. For measuring the differences in the capacity of this ivory cylinder, and thereby discovering its different degrees of moisture, M. de Luc makes use of quicksilver, with which he fills the cylinder, and a part of the communicating glass tube. The more capacious this cylinder is, or, which is the same, the moister it is, the lower does the mercury stand in the glass tube, and *vice versa*. Now M. de Luc has found, that the lowest point to which it can sink, is that where it stands when the ivory cylinder is soaked in melting ice: he therefore names or graduates this point 0 in the scale of his hygrometer; and, consequently, the degrees of this scale are degrees of dryness, counted from below upwards, as the quicksilver rises in the glass tube. To give these degrees a determinate length, and thus to render the hygrometers capable of being compared with each other, M. de Luc employs in constructing them such glass tubes as have been previously prepared, by being made into thermometers, and filled with mercury, so as to ascertain upon

them the points of melting ice and boiling water, and to take exactly the distance between these points by any scale at pleasure. When this is done, the bulb of this preparatory thermometer must be broken, and the quicksilver it contains exactly weighed. It is by knowing the weight of this, together with the distance between the fixed points of the thermometer, that the scale of the hygrometer is determined. *E. gr.* Let the weight of the quicksilver be one ounce, and the distance between the above-mentioned points one thousand parts of a certain scale; then suppose that the quicksilver in the hygrometer to which this tube is to be applied, weighs only half an ounce; this will give a fundamental line, consisting of 500 parts of the same scale. The fundamental line, thus found, is applied to the scale of the hygrometer, beginning at 0, and measuring it off about four times over, that the whole variation of the instrument may be comprehended. Each of those spaces being afterwards divided into 40 equal parts, gives such degrees as M. de Luc has found most convenient. In general terms, the length of the fundamental line of the hygrometer must be to the interval between the two fixed points of the preparatory thermometer, as the weight of the quicksilver in the hygrometer is to the weight of the quicksilver in that thermometer. This proportion between the scale of the hygrometer, and that of the preparatory thermometer, furnishes an easy method of correcting in this instrument the effects of heat upon the mercury which it contains. It will easily be conceived, from the construction of the scale of this hygrometer, that if its cylinder of ivory was suddenly changed into glass, the instrument would become a true thermometer, in which the interval between the points, answering to melting ice and boiling water, would be divided into 40 parts. If, therefore, a thermometer with a scale similarly divided into 40 parts between the fixed points, be placed near the hygrometer, it will shew immediately the correction to be made on that instrument for its variations as a thermometer, under particular restrictions, which M. de Luc has stated.

The part of the frame of the instrument upon which the scale is marked is immovable; so that, before observing the point at which the mercury stands, it may be pushed upwards or downwards, according as the thermometer has risen or fallen with respect to the point of melting ice; and thus the indications of the hygrometer can at once be freed from the errors which would arise from the difference in the volume of the quicksilver, on account of the different degrees of heat.

For this purpose, at the top of this scale, there is an index over-against another small scale, marked upon the unmovable part of the frame: the degrees of this small scale are eightieth parts of the fundamental line, and answering to the degrees of the thermometer on the same frame. When the index points to 0 of the small scale, the thread which indicates upon the tube of the hygrometer the point to which the mercury sunk in the melting ice, answers likewise to 0 in the scale of the hygrometer. See an elaborate account of the principles and advantages of this hygrometer, the particular process of its construction, and observations made with it by M. de Luc, in the *Phil. Trans.* vol. lxxiii. part ii. art. 38.

The instrument, with its frame, is seen in fig. 6. It is mounted on deal, because this wood suffers the least change in the length of its fibres. The lower part of the frame is slit through the whole length of the ivory pipe, in order that the air may circulate freely round this pipe, and the bulb of an annexed thermometer. The hygrometer is fastened in three parts, *viz.* at bottom on a small bracket, at top by a tube passing through a piece either of hard wood

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or of metal fastened by screws, and chiefly by means of a brass wire on the neck of the brass piece, which unites the glass with the ivory pipe. This piece is laid in a small plate of a hard wood, which in that place fills a groove originally made through the whole length of the board. To prevent dust from getting through the opening of the tube, it is shut up in a small ivory case. The scale of the hygrometer is marked upon a deal slip, which slides along the groove just mentioned. This and all the other parts of the frame must be lined with paper, for marking the necessary scales, and this paper is afterwards varnished over. The scale of the hygrometer is carried to the upper point, by means of a knob fixed on a small piece of hard wood or metal screwed to the bottom of the board, and which affords a free passage to the tube of the hygrometer.

Messrs. Saussure and De Luc have both successfully prosecuted their investigations in the science of hygrometry. The former of these gentlemen wrote an essay on hygrometry, which was published in 1783. In this elaborate, and in many respects excellent work, Saussure contends for the superiority of human hair, for the purpose of hygrometers. Hair, he finds, after it has been boiled in a weak alkaline lixivium, will expand by moisture nearly $\frac{1}{50}$ th of its length, and contract again by dryness; and that it is less liable to lose this effect by time than most other substances, and is moreover, from its tenuity, very quickly reduced to the present state of the atmosphere. On these accounts he gives it the preference to other substances, and constructs his hygrometer with it accordingly. The principle of the construction is to fasten one end of the hair to a fixed point, and the other to the arbor of a small wheel, which carries a fine needle at one extremity; this needle points out, upon a graduated circular arch, the hygrometric degrees. The hair is stretched by a counterpoise of three or four grains, suspended from the same arbor by a fine silk thread. A more particular description of the construction is given by the author, in reference to plate 1, fig. 1, of the essays. See *Plate XIII. Hydraulics, fig. 7.*

“The inferior extremity of the hair, *ab*, is held by the mouth of the screw-pincers, *b*; these pincers, represented separately in *B*, terminate in a screw, which enters into the female screw at *C*: this screw turns continually in its supporter, and serves to raise or depress *B* at pleasure. The other extremity, *a*, of the hair is held by the inferior mouth of the double moveable pincers, represented separately in *A*. These pincers, at their lower mouth, take hold of the hair, and at their upper a fine well tempered silver wire, which is wound round the arbor *d*, which is represented separately in *D F*. This arbor, which carries the needle *ee*, marked *E* in the separate figure, is cut like a screw, and the bottom of the thread is flat and cut square to receive the silver wire fastened to *a*, and connected to the hair. I was forced to use a silver wire, because, when the hair was fixed to the cylinder and wound round it, it grew rough, and contracted a stiffness, which the counterpoise could not overcome; whereas, a well tempered silver wire always keeps the same flexibility. It was necessary to cut the arbor like a screw, in order that this wire might not be wound upon itself and thicken the arbor, nor take a situation too oblique and variable. The wire is fixed to the arbor by a small pin *F*. The other end of the arbor, *D*, has the form of a pulley, flat at the bottom, to receive a fine flexible silk thread, to which is suspended the counterpoise marked *g* in the great figure, and *G* in the separate figure. This counterpoise, intended to stretch the hair, acts in a direction contrary to that of the hair, and of the moveable pincers to which it is fastened. If then it is desired the hair should be stretched with a weight of four grains, it is necessary the counterpoise should weigh four grains more

than the pincers. The same arbor passes on one end through the centre of the dial, and turns in a very small hole upon a true and well polished pivot. The other end has a similar pivot, which is received in a hole made at the end of the arm *b* of the double square *bi*, *H I*. This double square is fixed behind to the dial by the screw *I*. The dial *keek*, divided into 360 degrees, is supported by two ears *l, l*; these are soldered to two tubes, which surround the cylindrical columns *mm, mm*. The screws of pressure, *n, n*, pass through these tubes, and serve to fix the dial, and the arbor attached to it, to any desired height. These two columns which support the dial, are firmly fixed to the base of the hygrometer, which rests on the four screws *o, o, o, o*, by which it may be placed in a vertical position. The square column *pp*, which rests upon the farther cross bar of the base of the hygrometer, carries a box *q*, to which is fixed a kind of pencil case *r*, the vacuity of which is of the same diameter as the cylindrical counterpoise *g*. When the hygrometer is to be transported from one place to another, and some fear may be entertained that the vibrations of the counterpoise may do harm, the case is raised to receive the counterpoise which is then fixed by the screw *s*, and the box itself is fixed by another screw *t*. When the hygrometer is to act, the counterpoise is disengaged and the box lowered, as in the figure. Lastly, there is seen on the top of the instrument a piece of crooked metal *xyz*, which binds together the three columns just described. This piece is pierced in *y* with a square hole, which is convenient when the hygrometer is to be suspended.”

M. de Luc, however contends, in his “*Idées sur la Météorologie, 1786*,” that hairs, and all other animal or vegetable hygrometric substances taken lengthwise, or in the direction of their fibres, undergo contrary changes from different variations of humidity; that when immersed in water they lengthen first and then shorten; that when they are nearest the extreme of humidity, they shorten with an increase and lengthen with a diminution of humidity. These observations may be just; but the irregularities happening only in or near one extreme, and being small, may be neglected. Saussure takes his point of extreme moisture from the air confined under a glass bell, the sides of which are kept moist: De Luc objects to this as not exhibiting the maximum of moisture, and observes, that steam in an elastic state does not render bodies moist, as is proved by the experience of Mr. Watt, who found that wood, exposed to the steam of a steam-engine, was constantly dried and cracked as if exposed to the fire. This objection can scarcely apply, however, to the case. For the steam in an engine is generally some degrees warmer than the temperature necessary for its support as an elastic fluid, and a degree or two in temperature at the heat of the boiling water, have an infinitely greater effect in drying than they have at the ordinary temperature of the atmosphere. Besides, the point of extreme moisture in a hygrometer should most evidently indicate that state of the atmosphere when evaporation is at a stand, or the air is saturated with moisture without any visible deposition of water. It cannot be supposed that there is any interval between saturation and precipitation. De Luc prefers whale-bone upon the whole for an hygrometer, and of that a small thin slip cut across the grain. The description of his whale-bone hygrometer is given in the 81st vol. of the *Philos. Transac.* part ii. as follows.

“The frame will be sufficiently known from the figure (*fig. 8.*) therefore, we shall confine ourselves to the description of some particulars. “The slip of whale-bone is represented by *ab*, and at its end, *a*, is seen a sort of pincers made only of a flattened bent wire, tapering in the part that holds the slip, and pressed by a sliding ring. The end *b* is fixed to a move-

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able bar *c*, which is moved by a screw for adjusting at first the index. The end *a* of the slip is hooked to a thin brass wire, to the other end of which is also hooked a very thin silver gilt lamina, that has at that end pincers similar to those of the slip, and which is fixed by the other end to the axis, by a pin in a proper hole. The spring *d*, by which the slip is stretched, is made of silver-gilt wire; it acts on the slip as a weight of about 12 grains, and with this advantage over a weight (besides avoiding some other inconveniences) that in proportion as the slip is weakened with lengthenings by the penetration of moisture, the spring, by unbending at the same time, loses a part of its power. The axis has very small pivots, the shoulders of which are prevented from coming against the frame, by the ends being conical, though freely, between the flat bearings of the heads of two screws, the front one of which is seen near *e*." The section of that axis, of the size that belongs to a slip of about eight inches, is represented in fig. 9, the slip acts on the diameter *a a*, and the spring on the smaller diameter *b b*.

The point of extreme dryness is obtained in both instruments by inclosing them in a receiver of air, in which is a quantity of quicklime, which absorbs the moisture from the air and instrument; that of extreme moisture is found by De Luc, by immersing the instrument in water, or at least by wetting the whale-bone with water; but it is found by Saussure as above described.

The mean height of De Luc's hygrometer, for the whole year, in London, is about 79° . The mean height of Saussure's at Paris, (according to Bouvard's observations) for 1807, was $81^{\circ} 5'$, the driest 53° and the moistest 100° . The monthly means shew the air to be much drier in March, April, May, June, July, and August, than in the six succeeding months, every where in high north latitude.

2. *On the quantity of water absorbed from the air by chemical agents having an affinity for it.*—Though the action of animal and vegetable fibres on the atmosphere or the vapour in it must be of a chemical nature, yet in the instruments above noticed the quantity of waters absorbed by them makes no part of their history. In some sort of bodies however, the quantity of water they absorb from the atmosphere or part with into it, is the measure of their hygrometric action, and is determined by actually weighing the body exposed to the atmosphere. A sponge, suspended from the extremity of a balance beam, is heavier or lighter according to the hygrometrical state of the air; sulphuric acid, carbonate of potash, and other bodies, attract moisture from the air in great abundance, and when saturated according to the existing state of the atmosphere, will give or take moisture with the changes of the air, which of course may be determined by the balance. This sort of instrument however, being less portable than the other, and subject to other inconveniences, has been very generally abandoned.

3. *On the quantity of water evaporated under given circumstances.*—Some philosophers, conceiving that the best way to ascertain the disposition of the atmosphere to receive moisture, is to find by actual experiment how much water is evaporated from a given surface of water in a given time, have adopted this sort of experience as the most direct and accurate method of obtaining one object of hygrometry. Supposing the labour to be no objection, the method would answer the purpose completely, were not the influence of a greater or less current of air of so much consequence in evaporation. When the hygrometers, such as have been described, indicate dry, there can be no doubt that the air is disposed to quick evaporation; and it may be concluded conversely, that when evaporation is quick, an hygrometer would point to considerable dryness. It would be

desireable to ascertain whether a direct ratio subsists between these two effects in any given temperature; and also whether a change of temperature would disturb the ratio. Some account is given of a series of experiments on evaporation under that head, and their application to the present subject is obvious; but it is unnecessary to repeat them here.

4. *On the cold produced by the evaporation of water.*—Mr. Leslie has proposed a new hygrometer, or rather a new method of finding the rate of evaporation of water in the air; it may be seen in Nicholson's Journal, 4to. vol. 2. or in the 35th vol. of the Annales de Chimie. It is founded on the principle that evaporation produces cold, and consists of a kind of air-thermometer nicely adjusted, the bulk of which, by being moistened with water, immediately cools to a lower degree in consequence of the evaporation of the water, and the more the quicker the evaporation. Hence a law might be found to indicate, from the degree of cold produced, the rapidity of evaporation. If so, it would be a convenient substitute for the method pointed out in the preceding division. The author has not yet developed the advantages of this instrument so as to bring it into general use.

5. *On the dew-point; or that point of temperature at or below which dew is deposited from the atmosphere upon glass or any other smooth substance.*—M. Le Roi was the first, according to Saussure, who made a practice to find the dew-point of the air with hygrometrical views; he used to take a glass nearly full of water; then he gradually put into it ice-cold water, till a dew was deposited on the outside of the glass, and noted the temperature of the water. This temperature may be called the dew-point. Instead of ice-water, Saussure used pounded sal-ammoniac to cool the water; and a mixture of nitre and sal-ammoniac is still better. Saussure, however, conceives this expedient insufficient to answer the purposes of an hygrometer; though he allows the value of it taken in conjunction with the others previously described. Of late Mr. Dalton has revived the practice of Le Roi, shewn the rationale of the experiment, and founded upon it a new system of hygrometry. See Manchester Memoirs, vol. 5. part 2. pages 535 and 671: also vol. 1. second series, page 252. Some account of his views may be seen under EVAPORATION.

Mr. Dalton first establishes the fact, which indeed had been ably maintained before by De Luc, that the extreme quantity and force of vapour, in a vacuum of given dimensions, are the same as the extreme quantity of force of vapour in the same volume of any kind of air, provided the temperature is the same in both cases. That is, aqueous vapour exerts just the same whether air is present or absent, and its maximum is regulated solely by the temperature, supposing water as a source always to be present. He finds experimentally the utmost force of steam in a vacuum for each temperature, from 0° to 212° of Fahrenheit or upwards. This force is expressed in inches and decimals of mercury, which it can support in a barometer. When the force of steam in the air is required, it may be found from the dew-point; as this manifestly shews the temperature at which the steam of the air begins to be condensed. For instance, suppose the dew-point is at 45° : then the extreme force of vapour of that temperature, in a vacuum or in air, is per table, .316 of an inch of mercury, or $\frac{1}{3}$ th of the force of the atmosphere. Or, in a given volume of air, the weight of the vapour is $\frac{1}{13}$ th of the weight of the whole, allowing .7 for the specific gravity of pure steam. Hence we see the great importance of the dew-point, as from it the quantity of steam in any given volume of atmospheric air may be determined. Mr. Dalton extends his principles still farther than this;

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this; he not only determines the quantity of vapour in a given volume of air, as above, for the dew-point, but he finds the whole quantity of steam in a column reaching to the top of the atmosphere; he argues, that as in an atmosphere of pure steam the force of it at the earth's surface would be its weight, so in a mixture of atmosphere, till the elastic force of each at the earth's surface is the weight of the whole atmosphere of that kind. Hence, in the above instance, the weight of the incumbent aqueous vapours in the atmosphere is $\frac{1}{4}$ th of the whole weight of the atmosphere, and is equal to 4.3 inches of water. That is, if a perpendicular column of air to the top of the atmosphere had the whole of its steam (or water) precipitated to the bottom, leaving the air perfectly dry, the depth of the water so precipitated would be $4\frac{3}{4}$ inches nearly.

Thus it appears of what use is the dew-point in finding the quantity of water actually existing in the atmosphere at any time in the form of steam or elastic vapour, which is the first great object of hygrometry. But the use of the dew-point in ascertaining the other great object of hygrometry may be easily shewn. Mr. Dalton has proved, in the Essays above-mentioned, that the quantity of water evaporated from any given surface is proportional to the maximum force of vapour at the temperature which the surface has, the vapour being always understood to be in contact with water. But that if the force of steam be small, as in low temperatures, then the force of the steam already existing in the atmosphere must be deducted from the former, as having great influence in this last case, but very little in other cases where the evaporating force is comparatively large. Thus for instance, taking the dew-point at 45° as before, and assuming the temperature of the air at the same time to be 50° ; we have $.375 - .316 = .059$ for the evaporating force; but if the temperature was 54° , 58° , or 62° , the evaporating force would be 2.3, or four times as great respectively. This force does not, however, increase directly with the temperature; as 5° above 45 only produce the same evaporating force as 3° above 65 would produce, or as $\frac{1}{4}$ th of a degree above 162 would produce. Hence principally arises the much greater evaporation in summer than in winter.

In the Essays above referred to, Mr. Dalton has given an abstract of a series of observations on the dew-point for Manchester, lat. $53^\circ 20' N.$, which it may be proper to subjoin.

1800. July. Mean dew-point for 21 days = 53° , highest 62° , lowest 40° .
 Aug. Mean for 11 days = 56° , but too high for the monthly mean; highest 60° .
 Sept. Dew-point above 50° for 6 days; highest 60° .
 Oct. Dew-point mostly below 52° , highest 59° .
 1801. May. Dew-point above 50° for 4 days; highest 55° .
 June. Mean for 10 days $49\frac{1}{2}$; highest $57\frac{1}{2}$; lowest 30° . *
 July. Mean for 8 days 53° ; highest 56° .
 Aug. Mean for 22 days $54\frac{1}{2}$; highest 61° .
 Sept. Mean for 14 days 54° ; highest 60° .
 Oct. Dew-point for 5 days above 50° ; highest 57° .
 Nov. Highest 54° ; lowest 22° .
 Dec. Highest 44° ; lowest 18° .

* On the 13th, great damage done to potatoes, &c. by the cold which accompanied this remarkably low state of vapour for the season. The dew-point was 46° on the 12th, and 40° on the 14th.

In order to make the observations on the dew-point subservient to the purpose of a complete hygrometer, that is, one to denote both the actual quantity of vapour in the air,

and the rate at which evaporation is going on, it is necessary to notice the temperature of the air at the time of observation. In a series of meteorological observations this would be almost matter of course. Then the rate of evaporation obtained as above would indicate the drying power of the air at the time. A series of hygrometrical observations might then be thrown into the following form. The numbers in the last column are all multiplied by 100, to make them more suitable to common notation.

| | | Hygrometer. | | |
|-------------------------|------------|---|------|--------------------|
| Temperature of the Air. | Dew-point. | Corresponding quantity of Water in a vertical Column of the Atmosphere. | | Evaporating force. |
| | | Inches in depth | | |
| June 1. Morn. | 50° | 45° | 4.30 | 5.9 |
| | Noon | 70 | 4.30 | 40.5 |
| | Even. | 60 | 4.30 | 20.8 |
| 2. Morn. | 50 | 48 | 4.77 | 2.4 |
| | Noon | 65 | 5.10 | 24.1 |
| | Even. | 54 | 4.92 | 6.6 |

Saussure determined by some very important experiments the quantity of water in a cubic foot of air at the temperature 66° , both by abstracting the vapour from saturated air, and by saturating previously dried air. The results agree very nearly with the above theory. But when he attempted to ascertain the quantity of vapour in other temperatures, above and below, by means of his hygrometer, not by direct experiment, he did not succeed; at least the results will not agree with those deduced as above. He finds the quantities of water too large in the lower temperatures, and too small in the higher. This will be shewn by the following table.

TABLE of the Quantity of aqueous Vapour in the Atmosphere at different Temperatures.

| Dew-point. Temperature. | Water in a cubic Foot of air, in Grains, according to | | Whole Quantity of Vapour in a vertical Column to the Top of the Atmosphere, being condensed into Water, according to Dalton, amounts to |
|----------------------------|---|---------|---|
| | Saussure. | Dalton. | |
| | | | Inches in Depth. |
| 0° | — | .81 | .88 |
| 5 | — | .96 | 1.04 |
| 10 | 2.6 | 1.13 | 1.22 |
| 15 | 2.8 | 1.36 | 1.56 |
| 20 | 3.1 | 1.62 | 1.74 |
| 25 | 3.4 | 1.97 | 2.11 |
| 30 | 3.7 | 2.34 | 2.53 |
| 32 | 3.9 | 2.52 | 2.72 |
| 35 | 4.1 | 2.78 | 3.00 |
| 40 | 4.5 | 3.33 | 3.57 |
| 45 | 5.0 | 3.98 | 4.30 |
| 50 | 5.5 | 4.77 | 5.15 |
| 55 | 6.1 | 5.58 | 6.02 |
| 60 | 6.7 | 6.60 | 7.13 |
| 65 | 7.4 | 7.76 | 8.38 |
| 70 | 8.0 | 9.08 | 9.80 |
| 75 | 8.7 | 10.72 | 11.58 |
| 80 | 9.5 | 12.60 | 13.62 |

In the construction of this table, the force of vapour is taken from the table in the Manchester Memoirs, vol. v. part 2, and it is supposed to result from the pressure of an atmosphere of steam, when the fourth vertical column is calculated. The specific gravity of steam is supposed to be .7, that of common air being 1. Saussure's table in his Hygrometry, 8vo, page 261, is reduced from French grains and feet to English, by multiplying by two, and dividing by three; the grains which he gives as contained in saturated air. A reduction is also made from Reaumur's scale to Fahrenheit's.

Mr. B. M. Forster has favoured us with the following description of the winding oat-beard hygrometer.

The principal differences in this hygrometer from those usually made of oat-beards are the following.

The graduated circle (Plate XIII. *Hydraulics*, fig. 2.) is numbered completely round instead of half round each way, as usual. On the top of the oat-beard, (the *avena sterilis* of Linnæus, preferred on account of its size to the common oat,) is cemented a circular piece of paper A, on which is fixed a tubular piece of straw B, which is capped with another piece of paper C: D is a support to keep the beard upright, made of card paper. On the straw tube, or little cylinder, is fastened a piece of fine tilken string, on which is hung a pea, to serve as a weight to keep the string stretched.

As the oat-beard untwists with moisture, the index (made of straw) moves the same way round as the hand of a watch, and thus moving coils the string round the straw tube or axis, by which means the number of revolutions from any time observed may be known, and thus the confusion will be avoided, which is occasioned by the index moving more than once round, which it does in passing from extreme dryness to wet.

The spring may be so placed as to wind up when the index moves the contrary way, that is, from moist to dry, if the maker so chuses; and in this case the circle must be numbered the contrary way from the above. The oat-beard is fixed, and the index is not to be turned or set to a certain point, as is the case with the common hygrometer, by a contrivance behind the case. The method of keeping a register of this hygrometer will be thus.

When on the upper part of the axis there is one coil, and the index points at - - - - 6, set down 1-6.
two coils - - - - 6, ----- 2-6. &c.

If the circle be divided into 100 divisions, the reckoning will be no coil, and the hand at 10 set down 10,

1 Coil - - - 10 ----- 110,

2 Coils - - - 10 ----- 210, &c.

which, if the circle be large enough, will be a very convenient mode of registering. An account of this instrument was communicated by the inventor to the editor of the Philosophical Magazine. See vol. xi. p. 167.

Kater's hygrometer, as constructed by Mr. Thomas Jones, of Kenton-street. (See fig. 3.) The substance of which this hygrometer is composed, was discovered in India by captain Kater about the year 1800; and is the *Andropogon contortum* of Linnæus, a species of grass, and is called in the Mysore country, in the Canarese language, "Oobeena Hoocoo." It is best when gathered in the month of January, and should be thoroughly dried in the sun (in India) before it is used. While captain Kater was in India he had one made, which he used with great effect, for the refraction, during a series of observations, which he was then officially employed in making. The instrument was described in the Asiatic Researches, and was afterwards brought to England in the year 1806. Mr. Thomas Jones then made several on that plan; but it is now laid aside in consequence of a superior method which he has contrived. It may be proper to remark, that

this hygrometric substance acts in the same manner as our beard of the English oat, but it possesses much greater durability, and is exceedingly sensible, making from eight to twelve revolutions from extreme dry to extreme moist, simply of itself, without the means of an increased scale, by wheels and pinions. Each of those revolutions being divided into one hundred parts, gives the observer a scale of from 800 to 1200 parts from dry to moist, being an extent of scale which no other hygrometer possesses. The revolutions and parts are seen on a dial plate by means of two small hands. The instrument is of a cylindrical form, one inch and a half in diameter, and two inches long, extremely portable, and not in the least liable to injury in travelling in a carriage. Its sensibility is so great, that it may be truly said to be hardly ever at rest in the open air, particularly in the summer season, when the opening or shutting a door or window, or the approach of a person, is sure to be indicated. Perhaps it may not be amiss to remark, that it is sensibly affected in the hand of a person who may be in health or otherwise. The great sensibility of this instrument makes it particularly valuable where small quantities of moisture, &c. are required to be measured, in chemical or philosophical experiments; likewise for agricultural operations, and iron, steel, and cotton manufactories, &c. &c.

HYGROPHILA, in *Botany*, so named by Mr. Brown, from *ὕγρος*, wet, and *φίλω*, to love, or *delight in*, because of the attachment of this genus to a moist, marshy soil. Brown. Prodr. Nov. Holl. v. 1. 479.—Class and order, *Didynamia Angiosperma*. Nat. Ord. *Personate*, Linn. *Acanthi*, Juss.

Ess. Ch. Calyx tubular, half five-cleft, equal. Corolla ringent. Cells of the anthers parallel, unarmed. Seeds several in each cell. Partition attached to the valves.

This genus is removed from *Ruellia* on account of the ringent corolla and tubular calyx, which latter separates moreover into five deep segments, in consequence of the swelling of the capsule. *R. ringens* of Linnæus is one species, for which the Flora Zeylanica of that author, and the Hortus Malabaricus of Rheede, are, according to Mr. Brown, improperly quoted in the Species Plantarum. Another species, very nearly allied to the former, is

H. angustifolia of Brown. "Leaves lanceolate-linear, approximated in pairs, with hairy axillas. Upper joints of the stem shorter than the corolla. Found by sir Joseph Banks in the tropical part of New Holland.

These are caulescent plants, with narrow leaves, and axillary, crowded, nearly sessile flowers. The bractæas are small and fringed. Capsule sessile, its valves compressed at the back. Each seed is supported by a small prop, or elastic appendage.

HYGROPHOBIA, in *Medicine*, is sometimes used in the same sense with hydrophobia.

HYGROSCOPE, compounded of *ὕγρος*, moist, and *σκοπεῖν*, I observe, or consider, is commonly used in the same sense with hygrometer, which see.

Wolfius, however, regarding the etymology of the word, makes some difference. According to him, the hygroscope only shews the alterations of the air in respect of humidity and dryness; but the hygrometer measures them. A hygroscope, therefore, is a less accurate hygrometer.

HYIOTES, *ἡγιότης*, *Filiation*. See **ADOPTION**.

HYKES, a sort of blankets, in great use among the natives of Barbary. They are woven by the women, who make no use of a shuttle therein, but conduct every thread of the woof with their fingers. One of these hykes is usually six yards long, and five or six broad, serving the Kabyle as well as Arab, both male and female, for a complete dress in the day, and for his bed and covering in the night. It is a loose and troublesome kind of garment, being frequently

frequently disconcerted, and falling on the ground, so that the wearer is every moment to be taking it up, and folding it anew round his body. Dr. Shaw (Trav. p. 286.) takes it to be much the same with the *peplus*, if not with the *toga*, of the ancients.

HYLÆA, in *Ancient Geography*, a country of Europe in Scythia.

HYLARCHIUS, formed of *ἄλη*, *matter*, and *αρχη*, *government*, or *hylarchic principle*, a word by which some authors express what they call a ruling and presiding spirit, which governs and actuates all matter. See **PLASTIC**.

HYLAS, in *Ancient Geography*, a river, fountain, and lake in Bithynia.

HYLAS, in *Biography*, a musician and a dancer, brought up at Rome, under Pylades the Pantomime, and passionately beloved by him. He was so vain of his talents, that he arrogantly challenged his master. The challenge was accepted, the day fixed, and all Rome thronged to the theatre.

The two actors had to represent Agamemnon. The young Hylas, to add to his stature, had buskins on, which made him taller than usual, and he stood a tip-toe on the stage with all his might. The Roman youth were in raptures, and applauded with unbounded fury, crying out that he was divine!

Pylades then appeared, with a noble and dignified countenance, expressing by his steps and gestures, all the different sentiments which occupied the mind of the great king. The spectators, unanimously impelled by an irresistible approbation, rapturously cried out that he had obtained the victory. "Young man," says Pylades to Hylas, "we had to represent a king who commanded twenty kings; you have made him tall, and I have made him great."

HYLE, or **HYLEC**, from *ἄλη*, which signifies *matter*, among *Alchemists*, is their first matter, or it is matter considered as produced by nature herself; called also *chaos*.

HYLEG, or **HYLECH**, in *Astrology*, an Arabic term for a planet, or for a point of the heavens, which in a man's nativity becomes, as is pretended, the moderator and signifier of life.

HYLEGIAL PLACES, among *Astrologers*, are those wherein a planet being found, is qualified to have the government of life attributed to it.

HYLLEHROG, in *Geography*, a very narrow island, about three miles long, on the Baltic, near the S. coast of Lapland. N. lat. 54° 36'. E. long. 11° 32'.

HYLLIS, in *Ancient Geography*, a peninsula, called also the "Promontory of Diomedes," a cape of Liburnia, on the Adriatic sea.

HYLOBII, or **HYLOBIANS**, compounded of *ἄλη*, which, besides *matter*, signifies also *wood*, *forest*, and *βίαι*, *life*, a sect of Indian philosophers, thus denominated by the Greeks, because they retired to forests, to be more at leisure for the contemplation of nature.

HYLOPATHIANS, formed of *ἄλη*, *matter*, and *παθος*, of *πασχω*, *I suffer*. See the following article, and **ANAXIMANDRIANS**.

HOLOZOISTS, formed of *ἄλη*, *matter*, and *ζωη*, *life*, the name of a sect of atheists among the ancient Greek philosophers, who held matter to be animated; maintaining that matter had some natural perception, without animal sensation, or reflection, in itself considered; but that this imperfect life occasioned that organization, whence sensation and reflection afterwards arose. Of these, some held only one life which they called a *plastic* nature, presiding regularly and invariably over the whole corporeal universe, which they represented as a kind of large plant or vegetable: these were called the *cosmoplastic* and *stoical* atheists, because the Stoics

held such a nature, though many of them supposed it to be the instrument of the Deity. Others thought that every particle of matter was endued with life, and made the mundane system to depend upon a certain mixture of chance and plastic or orderly nature united together. These were called the *Stratonici*, from Strato Lampfacenus, a disciple of Theophrastus, called also *Phylicus*, (Cicero, De Nat. Deor. lib. i. cap. 13.) who was first a celebrated Peripatetic, and afterwards formed this new system of atheism for himself. Besides these two forms of atheism, some of the ancient philosophers were *Hylopathians*, or *Anaximandrians*, deriving all things from dead and stupid matter, in the way of qualities and forms, generable and corruptible; and others again adopted the anatomical or *Democritical* system, who ascribe the production of the universe to atoms and figures. See on this subject Cudworth's *Intellectual System*, vol. i. book i. chap. 3. Birch's edit. 1743.

HYLOGYNÆ and **HYLOPHAGI**, in *Ancient Geography*, a people of Ethiopia, who lived near one another, and were distinguished by similar manners; they made their habitations in the trees during the night for fear of wild beasts. Dioscorus has described them.

HYMÆAS, in the *Ancient Greek Music*. See **ΕΡΙΑΥΛΙΑ**.

HYMEN, in *Anatomy*, from *ὑμω*, a *membrane*, a fold of membrane of various sizes in different individuals, closing to a greater or less degree the entrance of the vagina in the virgin, but not found after marriage. See **GENERATION**.

HYMEN, *Imperforate*. See **VAGINA**, *Imperforate*.

HYMEN, in *Botany*, is used for a fine, delicate skin, where-with flowers are inclosed while in the bud, and which bursts as the flower blows or opens.

The term *hymen*, in this sense, is particularly used in speaking of roses.

HYMEN, in *Mythology* and *Poetry*, a term of invocation. *Hymen*, or *Hymenæus*, is properly a fabulous divinity, supposed by the ancients to preside over marriages; and who accordingly was invoked in epithalamiums, and other matrimonial ceremonies, under the formula, *Hymen o Hymeneè!*

The poets generally crown this deity with a chaplet, sometimes of roses, at other times of sweet marjoram; and represent him, as it were, dissolved and enervated with pleasures; dressed in a yellow robe, and shoes of the same colour, with a torch in his right-hand, and a flame-coloured veil in his left. Catullus, in one of his epigrams, addresses him thus:

"Cinge tempora floribus,
Suaveolentis amaraci."

It was for this reason, that the new married couple bore garlands of flowers on the wedding day; which custom also obtained among the Hebrews, and even among the Christians during the first ages of the church, as appears from Tertullian, De Corona Militari, where he says *Coronant et nuptæ sponso*. St. Chrysostom likewise mentions these crowns of flowers; and to this day the Greeks call marriages *στειφανισμα*, in respect of this crown or garland.

HYMENÆA, in *Botany*, from *Hymen*, the god of marriage, because, as Linnæus informs us, its younger-leaves cohere together in pairs throughout the night. This genus is the *Courbaril* of Plumier, who adopted that barbarous term from the inhabitants of South America, where the plant grows spontaneously. May not the similitude which its gum, when burnt, bears to the torch of Hymen, by emitting a clear flame, and grateful smell, be another satisfactory explanation of the above name?—Linn. Gen. 206. Schreb. 276. Willd. Sp. Pl. v. 2. 512. Mart. Mill. Diet.

v. 2. Ait. Hort. Kew. v. 2. 49. Juss. 351. Lamarck. Illustr. t. 330. Gært. t. 145.—Class and order, *Decandria Monogynia*. Nat. Ord. *Lomentacea*, Linn. *Leguminosa*, Juss.

Gen. Ch. *Cal.* Perianth of one leaf, leathery; tube short, turbinate, compressed, permanent, having an oblique mouth; limb four-cleft, nearly equal, erect, deciduous; segments ovate, obtuse, two opposite ones flattish, a little broader; the two others concave, with one side narrower. *Cor.* somewhat papilionaceous, of five, nearly equal petals, inserted into the neck of the calyx; standard, the two uppermost petals obliquely ovate, obtuse, sessile, at the upper concave segment of the calyx; wings, two petals, similar, lateral, a little narrower; keel, the bottom petal, channelled or hollowed out, approximating to the wings, within the lower concave segment of the calyx. *Stam.* Filaments ten, distinct, awl shaped, erect, deflexed nearly half way down, very long, within the keel and wings, inserted into the neck of the calyx; anthers linear, affixed to the back. *Pist.* Germen fabre-shaped, compressed, standing on a stalk; style very long, taper, deflexed; stigma thickened, obliquely truncated. *Peric.* Legume very large, ovate-oblong, obtuse, of one cell, filled with a powdery pulp. *Seeds* many, ovate, imbedded in dust and fibres.

Obs. Schreber has paid great attention to the above generic character, which is considerably dilated beyond the Linnæan description.

Ess. Ch. Calyx five-cleft. Petals five, nearly equal. Style twisted inwards. Legume filled with a farinaceous pulp.

1. *H. Courbaril*. Locust-tree. Linn. Sp. Pl. 537. (Courbaril; Plum. Gen. 49. t. 36. Ceratia diphyllos; Pluk. Phyt. t. 82. f. 3.)—Native of the West India islands, and the continent of America. A large spreading tree, its thick stem being covered with a russet bark. It is esteemed an excellent timber-tree if suffered to be old before it is felled. *Leaves* in pairs, pointed. *Flowers* in loose panicles at the end of the branches, of a yellow colour, striped with purple. *Pods* fleshy, brown, shaped like the common garden bean, about six inches long and half as broad, of a purplish brown colour and woody consistence, each containing a few seeds separated by transverse partitions, and inclosed in a whitish substance, intermixed with filaments, as sweet as honey, which is eaten by the Indians with great avidity. Between the principal roots of the tree exudes a fine transparent resin; yellowish or red, which is the *Gum Anime* of our shops. This is the finest varnish known, when dissolved in rectified spirits of wine. It has been remarked that the wild-bees are very fond of building their nests in the branches of this tree. Its wood is in great request for wheel-work in the sugar-mills, particularly for cogs to the wheels, being extremely hard and tough, as well as capable of a fine polish. It is so heavy that a cubic foot of it weighs about a quarter of an hundred weight. The *Hymenea* is a very tender stove-plant, and must constantly remain in the tan-bed. In growth it is very like the *Anacardium*, or Cashew-nut.

Willdenow has described two other species, *H. venosa* of Vahl, and *H. verrucosa* of Gærtner, the former brought from Cayenne, the latter from Madagascar, but they both nearly resemble the Courbaril, nor have we materials sufficient to decide concerning them.

HYMENÆUM, in the *Ancient Greek Music*, the nuptial song or epithalamium.

HYMENIUM, in *Botanical phraseology*, from *ὑμν*, a membrane, is used by Perfoon for the membranous smooth expanded surface in which the seeds of Fungi are imbedded. See **FUNGI**.

HYMENODES, of *ὑμν*, membrane, and *εδος*, form, an epithet applied by the old authors to such urine as is found

to be full of little films and pellicles. Hippocrates also applies it to the menstrual discharges, when they are mixed with a tough viscid phlegm.

HYMENOPAPPUS, in *Botany*, from *ὑμν*, a film or membrane, and *πᾶσις*, the seed-down, so called by l'Heritier from the crown of its seed being composed of membranous leaves or scales.—Willd. Sp. Pl. v. 3. 1776. l'Herit. Monograph.—Michaux Boreal. Amer. v. 2. 103. (Rothia; Lamarck. Illustr. t. 667.) Class and order, *Syngenesia Polygamia Æqualis*. Nat. Ord. *Composita discoidea*, Linn. *Corymbiferæ*, Juss.

Gen. Ch. *Common calyx* of many leaves, set in a double row, these leaves are loosely spreading, oblong, obtuse, green and downy at the base, white above, permanent. *Cor.* compound, tubular, uniform; florets all similar, perfect, fertile, longer than the calyx, funnel-shaped, hairy on the outside; tube thread-shaped; limb five-cleft, lanceolate, acute, revolute. *Stam.* Filaments five, capillary, erect; united anthers cylindrical, tubular, five-toothed, as long as the florets. *Pist.* Germen inferior, turbinate, hairy, crowned with the seed-down, and terminated by a roundish body which the thread-shaped style perforates; stigma on the outside, bifid, revolute. *Peric.* none, except the permanent calyx. *Seeds* solitary, angulated, truncated, elevated by the disk in two concentric rows, umbilicated, villose, brown; down of 12 or 15 approximating, erect, ovate, concave, somewhat torn or entire, membranous, pellucid scales. *Recept.* naked, rather small.

Ess. Ch. Receptacle naked. Seed-down of many scales, chaffy. Calyx of many leaves, spreading.

1. *H. scabifolius*. l'Heritier Monog. cum icone.—Native of Carolina, flowering towards the end of autumn. *Root* annual, somewhat tapering, and fleshy, a little branched at the sides, of a chestnut colour. *Stem* erect, branching, angulated, rather woolly, two feet high. *Leaves* alternate; radical ones on footstalks; stem-leaves gradually sessile, bipinnatifid; segments lanceolate, acute, green above dotted with little tubercles; downy and grey beneath; spreading. *Flowers* forming a corymbus, white, very fragrant.

The publication of l'Heritier, in which this new genus is founded and delineated, is one of those monographs, of which twelve copies only were printed, mentioned in our account of that author. See **L'HERITIER**.—Lamarck has described the same plant under the name of *Rothia carolinensis*, in the *Journal d'Hist. Nat.* vol. i.

HYMENOPHYLLUM, from *ὑμν*, a film, or membrane, and *φυλλον*, a leaf, because the foliage of this fern is remarkable for its filmy texture. Sm. Mem. of the Turin Acad. v. 5. 418. t. 9. f. 8. Tracts on Nat. Hist. 256. Fl. Brit. v. 3. 1141. (Trichomanes; Linn. Gen. 560. Juss. 16.)—Class and order, *Cryptogamia Filices*. Nat. Ord. *Filices*, Linn. Juss.

Gen. Ch. Fructifications inserted into the margin of the frond, distinct. *Involucrum* two-valved, flattish, straight, opening outwards; including the column.

Ess. Ch. Fructifications placed at the edge of the frond. *Involucrum* of two valves, opening outwardly.

Obs. "The bivalve involucrum and short column so distinct from the urn-shaped undivided involucrum, and long column or style, of the true *Trichomanes*," have induced Dr. Smith to establish this new genus in his dissertation on Ferns, printed by the academy of Turin.

1. *H. Tunbridgensis*. Tunbridge Filmy-leaf. Sm. Fl. Brit. 1141. Engl. Bot. t. 162. (Trichomanes Tunbridgensis; Linn. Sp. Pl. 1561.)—"Fronds alternately bipinnate, decurrent, sharply ferrated as well as the involucrum. Fructifications solitary at the upper edge of the base of each general division of the frond."—A native of moist and shady

rocks which it clothes in large tufts in Wales, Westmoreland, and the north of Yorkshire, and also by Powers-court cascade near Dublin, but more especially about Tunbridge, which is its original habitat. It flowers in May and June.—*Root* creeping, capillary, wiry, throwing out fibres occasionally and producing numerous upright *fronds*, which curl backwards from drought. Their substance is extremely membranous and pellucid, appearing finely reticulated under a microscope; their segments linear, sharply serrated and furnished with a strong central rib. *Frustrifications* in the place of the first segment, each terminating its appropriate nerve and pointing upwards. *Involucrum* arising from the substance of the leaf, of two slightly concave valves, between which is a short column, beset with small, round, bivalve capsules, each embraced with an elastic ring as in the more common ferns.

2. *H. alatum*. Wing-stalked Filmy-leaf. Engl. Bot. t. 1417. (H. Tunbridgensis β . Sm. Fl. Brit. 1142.)—“Fronds tripinnate, lobed, decurrent; segments linear, bluntnish, entire. Main stalk and branches winged. *Frustrifications* oblong, crenate, solitary at the upper edge of the base of each subdivision of the frond.”—Gathered in the county of Kerry, by Mr. Mackay, gardener to the botanic garden at Dublin.—This rare fern manifestly differs from the last in having a larger and more compound frond, and in its *main stalk* being winged from the very bottom; but more especially in the margin of the segments being always entire, and in the *involucrum* or *calyx* being oblong and cylindrical, not obovate and compressed, except towards the summit; neither is its margin serrated or toothed, but slightly and obtusely crenate. Dr. Smith remarks of this species, “Few of our British plants have been more enveloped in doubt than this; very few could better repay the scrutiny of the curious botanist.” We are now competent to describe it as a new species, for it does not agree with the character of any *Hymenophyllum* in Dr. Swartz’s Essay on Ferns in Schrader’s Journal. Dr. Swartz has there described 20 species, but the only two British ones known may serve as a sufficient epitome of the genus. We must not omit to mention that Mr. Brown, in his Prodr. Nov. Holl. v. 1. 159, refers the *H. alatum* to *Trichomanes*.

HYMENOPTERA, in *Entomology*, an order instituted by Linnæus for the reception of those insects which have four membranaceous wings, and the abdomen of the female mostly armed with a sting. The genera are cynips, tenthredo, firex, ichneumon, sphex, ammophila, scolia, thynnus, leucopis, tiphia, chalcis, chrysis, vespa, apis, formica, and mutilla.

HYMETTIUM MARMOR. See MARBLE.

HYMETTUS, in *Ancient Geography*, a mountain of Attica, S.W. of Athens, and of the Ilius, extending from the S.W. to the N.E., at the distance of a league from the city. It was celebrated for the excellent quality of its honey, which is highly extolled by Strabo, l. ix. It was also famous for its marble. On this mountain were altars, one consecrated to Jupiter, and the other to Apollo. See Pausanias, in Attica, c. 32.

HYMN, a song, or ode in honour of God; or a poem proper to be sung, composed in honour of some deity. See ODE and SONG.

The word is Greek, $\u03b7\u03bc\u03bd\u03bf\u03c2$, *hymn*; formed of the verb $\u03b7\u03bd\u03b5\u03b9\u03bd\u03bf$, *celebro*, I celebrate.

Ludore, on this word, remarks, that hymn is properly a song of joy, full of the praises of God; by which, according to him, it is distinguished from *threna*, which is a mourning song, full of lamentation.

The hymns, or odes, of the ancients; generally consisted

of three stanzas or couplets; the first called *strophe*; the second, *antistrophe*; and the last, *epode*.

St. Hilary, bishop of Poitiers, is said to have been the first that composed hymns to be sung in churches; he was followed by St. Ambrose. Most of those in the Roman breviary were composed by Prudentius. They have been translated into French verse by Messieurs De Port Royal. The Te Deum is also commonly called a hymn, though it be not in verse; so also is the *Gloria in excelsis*.

In the Greek Liturgy there are four kinds of hymns; but then the word is not taken in the sense of a praise offered in verse, but simply of laud, or praise. The angelic hymn, or *Gloria in excelsis*, makes the first kind; the *trifagion*, the second; the cherubic hymn, the third; and the hymn of victory and triumph, called $\epsilon\u03c0\u03b9\u03bd\u03b9\u03c9\u03c3$, the last.

HYMN of Castor, in the *Music of the Ancients*. The Lacedæmonians, in marching to battle, played on the flute what they called *Castoreum Melos*. Some authors pretend that Castor himself invented this hymn, and that from him it had its name; others that Minerva invented the hymn of Castor, and that this air served at first for the Pyrrhic dance.

HYMN of Aristotle to Hermias.

Aristotle honoured his friend and kinsman, Hermias, prince of Atarnea, with a hymn, or canticle, which is preserved in Athenæus, and in Diogenes Laertius, for which he is said to have been arraigned at a court of justice, where he was accused of impiously lavishing upon a mortal such honour and praise, as were due only to the gods.

Aristotle’s Hymn to Hermias.

“Virtue! thou source of pure delight,
Whose rugged mien can ne’er affright.

The man with courage fir’d;
For thee the sons of Greece have run
To certain ill, which others shun,
And gloriously expir’d.

“When’er thy sacred seeds take root,
Immortal are the flow’rs and fruit,
Unfading are the leaves;
Dearer than smiles of parent kind,
Than balmy sleep, or gold refin’d,
The joys thy triumph gives.

“For thee the Twins of mighty Jove,
For thee divine Alcides strove
From vice the world to free;
For thee Achilles quits the light,
And Ajax plunges into night,
Eternal night, for thee.

“Hermias, the darling of mankind,
Shall leave a deathle’s name behind
For the untimely slain;
As long as Jove’s bright altars blaze,
His worth shall furnish grateful praise,
To all the Muse’s train.”

The offence given by Aristotle in this poem, which his enemies denominated a Pæan, seems to have been the saying that the actions of his friend would be sung by the Muses, as long as the worship of Jupiter Hofpatalis continued. Athenæus, however, did not regard it as a true Pæan, because the characteristic exclamation *Io Pæan* did not occur in any part of it.

HYMN of Battle, a kind of air which was sung by the Greeks when they advanced to battle, and began to charge instead of the shout, which was used at other times. Traces of this custom are still found amongst the Arnauts, inhabit-

ants of Macedonia, now subject to the Turks. These people, stout and bold, like their ancestors, engage with a rapid pace; the chief sings, and his troops answer, whilst they press forward with an accelerated velocity. These hymns ought to be short, and consist of short verses, set to a lively air. Horace speaks in one of his odes of a poet called Tyrtaeus, who, in the wars of Messina, animated by his verses the Lacedæmonians to such a degree, that they thus gained a complete victory. In the time of Thucydides, however, the Lacedæmonians marched in silence to the sound of flutes, and by its cadence regulated their steps, the better to preserve their ranks. It was this, without doubt, which gave marshal Saxe the first idea of marching to time; one of the best plans that could be devised to perfect the military art.

HYMNIA, in *Mythology*, a surname given to Diana, under which appellation she was worshipped, and had a temple in Arcadia.

HYMNUS, *Lat. Hymnus, Gr. a song in honour of gods or heroes*. The difference between a *hymn* and a *canticle* consists in this, that the canticle more generally relates to actions, and the hymn to persons. The first songs of all nations have been canticles or hymns. Orpheus and Linus passed among the Greeks for the authors of the first hymns, and there remain among the works of Homer a collection of hymns to the gods.

We have a fine translation of the hymn of Callimachus to Apollo, by Prior, and of Homer's hymn to Venus, by Congreve.

HYNE-LOUGH, in *Geography*, the name given to a small bay on the south coast of Ireland, in the county of Cork, which lies west of Toe-head, between it and Baltimore.

HYNNERY, a town of Sweden, in the province of Smaland; 45 miles W.S.W. of Wexio.

HYOBANCHE, in *Botany*, from *ύς, ύος, a hog*, and *αρχη, to choke or strangle*; at least so it appears by the analogy of *Orobanche*, which Linnæus certainly had in view.

Schreb. 421. Willd. Sp. Pl. v. 3. 354. Mart. Mill. Dict. v. 2. Juss. 101. Lamarck Dict. v. 3. 158.—Class and order, *Didynamia Angiospermia*. Nat. Ord. *Personata*, Linn. *Pedicularis*, Juss.

Gen. Ch. *Cal.* Perianth of seven, linear, pointed, erect leaves, as long as the corolla. *Cor.* of one petal, ringent; upper lip vaulted, emarginate; lower lip none. *Stam.* Filaments four, in pairs, inserted at the base of the corolla, of a middling length; anthers ovate, drooping, bursting on the upper side. *Pist.* Germen superior, ovate; style thread-shaped, curved at the top; stigma thickish, obtuse, emarginate. *Peric.* Capsule roundish, two-celled. *Seeds* numerous, small.

Obs. This genus is separated from *Orobanche* on account of the structure of its calyx and corolla.

Eff. Ch. Calyx of seven leaves. Corolla ringent, having no lower lip. Capsule of two cells and many seeds.

1. *H. sanguinea*. Linn. Mant. 253. (*Orobanche mauritanica*, flore purpureo; Pet. Gaz. t. 37. f. 4.)—Found at the Cape of Good Hope growing parasitically on other roots. *Stem* about six inches high, quite simple, woody, imbricated with leaves which are formed of ovate, thickly imbricated, outwardly convex, smooth, obtuse scales. *Spike* terminal, villose, imbricated with bractæes and flowers, which latter are solitary and sessile. In habit and structure this genus is nearly allied to *Orobanche*, but is of a blood-red colour throughout.

HYO-GLOSSUS, in *Anatomy*, a muscle of the tongue. See **DEGLUTITION**.

HYOIDES, from *υ, and υδος, form*, a bone resembling

the Greek letter upsilon in its shape, and connected to the root of the tongue. See **DEGLUTITION**.

HYO-PHARYNGEUS, a name sometimes given to the middle constrictor pharyngis muscle. See **DEGLUTITION**.

HYOSCYAMUS, in *Botany*, from *ύς, ύος, a hog*, and *υξαρμος, a bear*. Ælian relates that if this plant be devoured by swine its effects are extremely noxious, and that the animals which partake of it will die, unless they are well drenched with water both internally and externally.—Linn. Gen. 98. Schreb. 133. Willd. Sp. Pl. 1010. Mart. Mill. Dict. v. 2. Sm. Fl. Brit. 254. Ait. Hort. Kew. v. 1. 240. Tournef. t. 42. Juss. 124. Lamarck Dict. v. 3. 327. Illustr. t. 117. Gært. t. 76.—Class and order, *Pentandria Monogynia*. Nat. Ord. *Lurida*, Linn. *Solaneæ*, Juss.

Gen. Ch. *Cal.* Perianth of one leaf, tubular, ventricose below, with a five-cleft, acute mouth, permanent. *Cor.* of one petal, funnel-shaped; tube cylindrical, short; limb straight and spreading, five-cleft half way down, its segments obtuse, one broader than the rest. *Stam.* Filaments five, awl-shaped, inclining; anthers roundish. *Pist.* Germen roundish; style thread-shaped, as long as the stamens; stigma capitate. *Peric.* Capsule ovate, obtuse, marked with a line on each side, two-celled, seeming to be formed of two capsules closely approximating, with a lid opening horizontally; receptacles half-ovate, affixed to the partition. *Seeds* numerous, rugged.

Eff. Ch. Corolla funnel-shaped, obtuse, irregular. Stamens inclined. Capsule with a lid, two-celled.

1. *H. niger*. Common Henbane. Linn. Sp. Pl. 257. Engl. Bot. t. 591. Woodv. Med. Bot. t. 52.—“Leaves sinuated, embracing the stem. Flowers sessile.”—Common in waste ground by the road side throughout England, more especially on a dry calcareous soil, flowering in July. *Root* annual, spindle-shaped. *Stem* branched, round. *Leaves* alternate, sessile, oblong, sharply sinuated. *Spikes* terminal, simple, recurved, accompanied with leaves. *Flowers* sessile, erect. *Calyx* pitcher-shaped, reticulated with veins. *Corolla* yellow, very gracefully pencilled with a net-work of purple veins. The whole plant is hairy, viscous, poisonous, and narcotic, except its seeds, whose oil counteracts their noxious properties. “The seeds and capsules together, smoked as tobacco, are in some places a popular remedy for the toothache, but convulsions and temporary insanity sometimes follow its use.”

2. *H. reticulatus*. Ægyptian Henbane. Linn. Sp. Pl. 257. (*H. flore rubello*; Ger. em. 355. f. 5.)—“Stem-leaves on footstalks, sinuated, acute; floral-leaves entire. Flowers ventricose.” Native of Crète, Syria and Egypt.—It flowers in July.—This annual is very similar to the common Henbane, but differs in having its stem-leaves ovate, bent upwards, and smoother on the upper side; the floral-ones sessile and entire. *Flowers* on a very short stalk, bell-shaped, red, beautifully reticulated with dark veins; their tube swollen.

3. *H. albus*. White Henbane. Linn. Sp. Pl. 257. Ger. em. 353.—“Leaves on footstalks, sinuated, obtuse. Flowers sessile.”—Native of the south of Europe, flowering in August.—This also resembles *H. niger* in habit and structure, but the leaves are more rounded or obtuse, very soft, clothed with white hairs, as is also the stem. *Flowers* fewer; lower ones on longer stalks than the upper. *Capsule* membranaceous, ventricose at the bottom. *Seeds* numerous, small, kidney-shaped, of a whitish ash-colour.

Linnæus observed a variety of this species having the throat of the corolla coloured with dark purple and green.

4. *H. aureus*. Golden-flowered or shrubby Henbane. Linn. Sp. Pl. 257. Curt. Mag. t. 87.—“Leaves on footstalks,

stalks, bobed, dentate, acute. Flowers on stalks. Fruit pendulous?—A native of Crete and other parts of the East. It is very commonly cultivated in this country, as it flowers almost through the summer, and is extremely ornamental.—*Root* biennial (perhaps perennial.) *Leaves* roundish, acutely indented on their edges, hairy. *Flowers* at each joint of the stem, of a bright yellow colour with a dark purple base. *Style* much longer than the corolla. *Alpinus* and other authors make two varieties of this, differing only in size and the shade of colour in the corolla.

5. *H. muticus*. Smooth or beardless Henbane. Linn. Mant. 45. Willd. n. 5. Schmidel. Ic. t. 71.—*Leaves* on footstalks, ovate, acutely angled. Calyx without awns. Bractæas undivided—Native of Egypt and Arabia.—*Stem* a foot high, erect; roundish, somewhat pubescent. *Branches* axillary, shorter. *Leaves* alternate, obtusely sinuated, acute, entire, palish. *Raceme of flowers* all directed one way, curved in at the top. *Calyx* bell-funnel-shaped, not at all spinous. *Flowers* campanulate; at first green on the outside, then whitish; on the inside very dark purple, but finally, the whole flower becomes white and unspotted. *Stamens* declining, purple, a little longer than the corolla. *Pistil* longer, declining.

6. *H. pufillus*. Dwarf Henbane. Linn. Sp. Pl. 258. (*H. pufillus aureus americanus*; Fluk. Phyt. t. 37. f. 5.)—“*Stem-leaves* lanceolate, toothed; floral-leaves in pairs, entire. Calyx furnished with spines.”—Native of Persia.—*Root* annual. *Stem* six inches in height, brittle, hairy. *Leaves* alternate, on long hairy stalks. *Calyx* turbinate, ten-angled, nearly the length of the corolla, and broader than its tube, spiny at top. *Corolla* yellow with a black throat, divided on the lower side beyond the limb. *Stamens* declining.

7. *H. physalodes*. Purple-flowered Henbane. Linn. Sp. Pl. 258. Amœn. Acad. v. 7. t. 6. f. 1. Curt. Mag. t. 852.—“*Leaves* ovate, quite entire. Calyx inflated, sub-globular.”—A native of Siberia, flowering in March and April. *Root* perennial. *Stems* a foot high, simple, erect, round, rough with hairs. *Leaves* alternate, heart-shaped, entire, dark-green, hairy underneath, the upper ones gradually larger. *Flowers* in bundles, terminal, of a purple colour, funnel-shaped, erect. *Stamens* a little shorter than the corolla; converging. *Style* as long as the corolla. *Stigma* capitate, emarginate, whitish. This plant seems to be *Pulmonaria hirta*, Linn. Sp. Pl. App. 1667.

8. *H. Scopolia*. Night-shade leaved Henbane. Linn. Mant. 46. Willd. n. 8. Curt. Mag. t. 1126.—“*Leaves* ovate, entire. Calyx inflated, campanulate.”—A native of Carniola, flowering in May.—*Root* perennial; *stem* nearly a foot high, forked. *Leaves* alternate, occasionally opposite, lanceolate-ovate, naked, entire. *Stalks* axillary, single-flowered. *Flowers* pendulous. *Calyx* smooth, beardless. *Corolla* bell-shaped, very similar to that of *Atropa Belladonna*, the deadly nightshade. *Filaments* hairy, straight. *Capsule* globose, of two cells.

Obs. These two last species *H. physalodes* and *Scopolia* differ from the rest in having the fruit seldom opening, and a more regular corolla.

HYOSCIAMUS Peruvianus, *henbane of Peru*, a name by which Dodonæus and many other authors have called the tobacco plants, more usually known by the name *nicotiana*.

HYOSERIS, from ὕος, υός, a swine, and σίησις, a kind of lettuce, whence its English appellation *swine's lettuce*, or *swine's succory*. Linn. Gen. 404. Schreb. 531. Willd. Sp. Pl. v. 3. 1612. Mart. Mill. Dict. v. 2. Sm. Fl. Brit. 839. Ait. Hort. Kew. v. 3. 130. Juss. 169. Lamarck. Dict. v. 3. 158. Illustr. t. 654. Gærtn. t. 160. (*Taraxacostrium*; Vail. Mem. Acad. des Sc.—ann. 1721.) Class and order,

Syngenesia Polygamia Æqualis. Nat. Ord. *Compositæ Semisif-culozæ*, Linn. *Cichoraceæ*, Juss.

Gen. Ch. *Common calyx* cylindrical-angular, about eight or ten-cleft, permanent; scales lanceolate, erect, acute, somewhat keeled, equal, calyced at the base with very short close scales. *Cor.* compound, somewhat imbricated, uniform; each flower hermaphrodite; proper, of one petal, tongue-shaped, linear, truncated, five-toothed. *Stam.* Filaments five, capillary, very short; anthers united, tubular. *Pist.* Germen oblong; style thread-shaped, the length of the stamens; stigmas two, reflexed. *Peric.* none; common permanent calyx close or spreading. *Seeds* solitary, oblong, membranaceous, streaked on one side along the middle, almost the length of the calyx; the marginal ones broadest; down sessile, chaffy. *Receptacle* naked.

Ess. Ch. Calyx almost equal. Down simple, chaffy. Receptacle naked.

1. *H. minima*. Swine's succory. Linn. Sp. Pl. 1138. Engl. Bot. t. 95. (*H. macula*; Ger. em. 288.)—“*Stem* divided, destitute of leaves. Flower-stalks swelling upwards.”—Found in barren sandy gravelly fields, but rather sparingly, flowering in June.—*Root* annual, small, spindle-shaped. *Leaves* radical, depressed, oblong, toothed, now and then entire, rough, particularly at their edges. *Stems* three, four, or more, round, smooth, taper, and purplish at the bottom, under the flowers hollow and inflated, with here and there a few scattered, pointed, erect bractæas. *Flowers* solitary, small, lemon-coloured; florets very obtuse, and toothed. *Seeds* crowned with an elevated chaffy border.

Several species of this genus, of which Willdenow reckons eight in all, require revision, nor are the generic characters well defined. In some instances the crown of the seed is encompassed with hairs.

HYOSYRIS, a name given by Pliny and some other authors to the common knapweed, or *jacea nigra*.

HYO-THYROIDEUS, in *Anatomy*, a muscle passing between the os hyoides and the thyroid cartilage, and described in the article *DEGLUTITION*.

HYPACARIS, or *HYPACYRIS*, in *Ancient Geography*, a river of Scythia, which sprung, according to Herodotus, from a lake, and passing through the middle of the country of the Scythian Nomades, discharged itself into the Euxine sea, near the town of Carcinites, forming on the right Hylæa and the Curfus Achilles.

HYPACTIC MEDICINES, formed of ὑπαίσις, *I take away*, a term used by some authors for cathartic medicines.

HYPÆA, in *Ancient Geography*, one of the islands called Stæchades, now Hieres, situated on the coast of Gallia Narbonnensis.

HYPÆPA, a town of Lydia, between the Tmolus and the Cayster.

HYPÆSIA, a country of the Peloponnesus, in Triphylia.

HYPÆTHROS, or *HYPÆTHRION*, ὑπαίθρον, formed of ὑπο, *under*, and αἶθρα, *air*, in the *Ancient Architecture*, a kind of temple, open at the top, and thereby exposed to the air.

The hypæthron, according to Vitruvius, is an open building or portico, such as anciently were certain temples that had no roof or covering. Of this we have an instance, in the temple of Jupiter Olympius, built by Cossutius, a Roman architect at Athens.

Of hypæthrons, some were decastyle, others pycnostyle; but they had all rows of columns within-side, forming a kind of peristyle; which was essential to this sort of temple.

HYPALLAGE, *IMMUTATION*, a grammatical figure, whereby,

whereby, of different expressions which give the same idea, we make choice of that which is least natural and obvious; or, when there is a mutual permutation or change of cases, moods, regimens, &c.

The term is formed of ὑπαλλαττω, *I change*, composed of ὑπο and αλλαττω, *I change*; of αλλοις, *another*.

As in this instance; *Dare classibus aulstros*; instead of *Dare classes aulstros*.

HYPANA, in *Ancient Geography*, a town of Triphylia, E. of Acheron and N. of Typana.

HYPANIA, a town of the Peloponnesus in the Elide; probably the same with Hypana.

HYPANIS, a river of European Scythia, since named the *Bog*. According to the ancients it originated in a large lake, called the "Sea of the Hypanis."

HYPAPANTE, or HYPANTE, a name which the Greeks give to the feast of the purification of the holy Virgin, or the presentation of Jesus in the temple.

The words are Greek, ὑπαντι, and ὑπαπαντη, which properly signify *humble*, and *lowly meeting*; being compounded of ὑπο, *under*, *beneath*, and αντι, or απαντι, *I meet*, of αντι, *contra*, *against*. The denominations are taken from the meeting of old Simœon, and Anna the prophetess, in the temple, at the time the child Christ Jesus was brought thither.

HYPARNA, in *Ancient Geography*, a town of Asia, in Lycia, according to Arrian.

HYPATA, a town of Greece, and one of the principal towns of Thessaly, according to Apuleius, *Afin. Aur. l. i.*—Also, a country of Asia, on the river Sangar.

HYPATE, ὑπατη, in the *Greek Music*, an epithet by which the Greeks distinguished the lowest tetrachord, and the lowest string of each of the two lowest tetrachords.

HYPATE *Hypaton*, was a tone higher than the *proslambanomenos*. See *Greek SCALE* and *NOTATION*.

HYPATE *Meson*, ὑπατη μεσον, the lowest string of the second tetrachord, which was also the most acute of the first, as these tetrachords were conjoint. See *CONJOINT*.

HYPATE *Prima*, in *Music*, is an interval, so called by M. Henfling, whose ratio is $\frac{2}{3} = 358 \text{ S} + 7 \text{ f} + 31 \text{ m}$, or the *FIFTH*, which see.

HYPATIA, in *Biography*, a female philosopher of the Eclectic sect, was the daughter of Theon, a celebrated mathematician of Alexandria, who flourished in the fourth and fifth centuries. The talents of his daughter were cultivated with great assiduity, and she was made mistress of the different branches of polite learning, and became intimately conversant in the sciences of geometry and astronomy, as they were at that day understood. She next applied herself to philosophy, and is said to have excelled all the philosophers of her time. So high was her reputation, that she was strongly solicited to become a public preceptress in the school where Ammonius, Hierocles, and other celebrated philosophers taught: and such was her attachment to science, that she yielded to the public voice, and became an instructor in the schools. Here she explained the principles of philosophy, and endeavoured to reconcile the systems of Plato, Aristotle, and other masters. The celebrity of her name attracted scholars from all parts, and she gained the respect and admiration not only of those who formed her auditories in the schools, but the most eminent characters in Alexandria, and was even consulted by the magistrates in cases of importance. She is said, however, not to have been intoxicated by the respect which was paid to her from all quarters; that though she excelled most of the philosophers of the age in mathematical learning and science, she discovered no pride, and though she was in person exceedingly beautiful, she never yielded to

the impulse of vanity, nor ever gave occasion to the slightest suspicion against her chastity. Possessed of such extraordinary accomplishments and virtues, her house became the resort of persons of learning and distinction; but her talents excited the jealousy of mean and little minds, and the attainments to which she was indebted for her celebrity proved the occasion of her destruction. Orestes, a man of liberal education, and intimately acquainted with Hypatia, whom he frequently consulted, was governor of Alexandria; and Cyril, a bishop of great authority, but haughty, violent, and intolerant in the highest degree, filled the patriarchal chair of that city. This prelate, who perhaps did not wish to appear the avowed persecutor, instigated the populace to plunder the property of the Jews, by forcibly expelling them from Alexandria. Orestes, repenting his conduct, laid the affair before the emperor; who, declining to interfere in the dispute, the city became a scene of frequent tumults and contests between the partisans of the prelate and governor. The intimacy of Orestes with Hypatia now became a ground of jealousy to Cyril, who felt indignant that his rival should have it in his power to be benefited by her sage advice, on which account she was calumniated by the bishop's friends among the monks and Christian populace, and at length she fell a sacrifice to their malignity. Not satisfied with her life, they put her to the most extreme torture, and then treated her dead body with the utmost indignity. Hypatia was murdered in the year 415; under the reign of Theodosius II. by the consent and wishes, if not by the direct instigation, of Cyril, a bishop of what was falsely called Christianity. The Christian religion teaches every thing that is excellent, kind, and praiseworthy, and the actions of malignant priests are not to be imputed to the creed which they profess, but to the rancour of heart, which is but too frequently found in the tyrants of the world, in ecclesiastical as well as civil polity. Moreri. *Enfield's Hist. Phil.*

HYPATOIDE, in *Music*, a name, or air, in a low pitch.

HYPATOÏDES, grave sounds. See *LEPSIS*.

HYPATON, DIATONOS. See *DIATONOS* and *SYSTEM*.

HYPÆLYPTUM, in *Botany*, a name of whose meaning we can discover nothing. Can it have been corrupted from the *Hypolytrum* of Richard and Persoon, which has a great appearance of being the same genus? For this suggestion we are indebted to Mr. Brown.—*Vahl. Enum. v. 2. 283. Brown. Prodr. Nov. Holl. v. 1. 219.*—Class and order, *Triandria Monogynia*. *Nat. Ord. Calamariæ, Linn. Cyperoidæ, Juss.*

Gen. Ch. *Cal.* Spike closely imbricated on all sides, with obovate concave scales, one of them to each flower; perianth of two membranous linear valves, nearly as long, and opposite to each scale. *Cor.* none. *Stam.* Filaments three; anthers linear. *Pist.* Germen superior, oblong-ovate; style one, cloven, deciduous; stigmas two or three, undivided. *Peric.* none. *Seed* solitary, naked, obscurely triangular, without any hairs at the base.

Eff. Ch. Scales imbricated every way, single-flowered. Perianth of two valves, opposite to each scale. Corolla none. Seed one, naked, beardless.

This genus is allied to *Kyllingia*, with which it agrees in habit. The species in Vahl are four:

1. *H. pungens*. "Spikes ovate-oblong. Scales obtuse. Involucrum spinous-pointed."—Supposed to be a native of South America. *Stems* two feet high.

2. *H. argenteum*. "Spikes ovate. Scales acute. Style three-cleft. Leaves linear."—Native of the East Indies and of Senegal. *Stem* a foot high. *Flowers* very white.

3. *H. sphacellatum*. "Spikes ovate. Styles two-cleft.

Leaves.

Leaves linear."—Found at Tranquebar. A foot high. Spikes whitish, brown when old.

4. *H. filiforme*. "Spikes oblong. Stem thread-shaped. Leaves brittle-shaped."—Native of Guinea. Glauous, six inches or more in height. Spikes dark brown when old.

The roots of all are fibrous and purple. Stems triangular, erect, without joints. Leaves two or three, channelled, rigid, rough-edged, sheathing. Involucrum mostly two-leaved. Spikes terminal, sessile.

To these Mr. Brown adds a fifth.

5. *H. microcephalum*. "Spikes ternate, nearly globose. Scales linear-wedge-shaped, awned. Involucrum of two very long leaves."—Native of the tropical part of New Holland. The stem is slender, triangular.

HYPECOUM, appears to be derived from *υπηχυω*, to refund, because its seed-vessels when touched by the hand burst with a crackling noise. This genus is the *υπηκοου* of Dioscorides, and Hypecoum of Pliny.—Linn. Gen. 66. Schreb. 90 Willd. Sp. Pl. v. 1. 704. Mart. Mill. Dict. v. 2. Ait. Hort. Kew. v. 1. 168. Sm. Prodr. Fl. Græc. v. 1. 107. Juss. 236. Lamarck Dict. v. 3. 160 Illustr. t. 88. Gært. t. 115. (Hypecoon; Tournef. t. 115.) Class and order, *Tetrandria Digynia*. Nat. Ord. *Corydalis*, Linn. *Papaveraceæ*, Juss.

Gen. Ch. Cal. Perianth small, of two, ovate, acute, erect, opposite, deciduous leaves. Cor. of four petals, the two exterior ones opposite, broader, trifid, obtuse; the two inner alternate with the others, trifid half way down; the middle segment concave, compressed, erect. Stam. Filaments four, awl-shaped, erect, covered by the middle segment of the inner petals; anthers erect, oblong. Pist. Germen superior, oblong, cylindrical; styles two, very short; stigmas acute. Peric. Pod long, curved inwards, jointed. Seeds globose, compressed, a single one in each articulation of the seed-vessel.

Obs. The stamens of *H. erectum* appear to be tetradynamous.

Eff. Ch. Calyx of two leaves. Petals four, the two outer ones broader. Fruit a pod.

1. *H. procumbens*. Linn. Sp. Pl. 181. (Cuminum corniculatum, five Hypecoum Clusii; Ger. em. 1067. 3.)—"Pods curved, compressed, jointed. The two larger petals obtusely three-lobed." Native of the south of Europe, and cultivated, by Gerarde, in this country, before 1597. It flowers in June and July, ripening seed in August.—Root simple, annual, fibrous. Leaves chiefly radical, much divided, pale green, with a greyish or glaucous tinge. Stems several, slender, compressed, naked at bottom, but furnished with a few leaves at the upper part, amongst which the flower-stalks appear, each supporting a small yellow flower. Pod grooved with longitudinal streaks. Seeds from ten to twenty, dark brown.—*H. patens*, Willd. Hort. Berol. t. 5, seems not different from this.

2. *H. littorale*. Willd. n. 2. Jacq. Collect. v. 2. 205. Ic. Rar. v. 2. t. 309.—"Pods jointed, compressed, curved. Petals entire, the outer ones longer and linear-spatulate."—A native of dry sand on the shores of Germany.—This is scarcely more than a variety of the last, as it differs only in the leaves being shorter and more acutely toothed, with entire and paler petals.

3. *H. pendulam*. Linn. Sp. Pl. 181. (Cuminum siliquosum; Ger. em. 1067. 2.)—"Pods drooping, round, cylindrical. The larger petals obtusely three-lobed."—A native of the south of France, flowering in June and July.—Stem more slender, and standing more erect than in *H. procumbens*. Leaves also longer and narrower. Flowers smaller, appearing at the divisions of the branches, they are yellow like those of the greater Celandine, but less.

4. *H. erectum*. Linn. Sp. Pl. 181. Amm. Ruth. 58. t. 9. "Pods erect, round, torulose. The larger petals emarginate, three-lobed." Amman received seeds of this plant from Dauria, and Miller from Iltria; the latter cultivated it here before 1759. This has much the appearance of the last in leaf and flower, but its pods grow erect, and are writhed and twisted about.

5. *H. imberbe*. Sm. Prodr. Fl. Græc. n. 378.—Pods curved, compressed, jointed. All the petals beardless.—Found by Dr. J. Sibihorp in the isle of Cyprus. A figure of this species is destined for the Fl. Græca, t. 156. It has the habit of the rest.

Obs. The juice of these plants is of a yellow colour, resembling that of Celandine, and is said to have the same narcotic effect as opium.

HYPELATE, from *υπερ*, under, and *ελαιον*, a fir-tree, so named by Dr. Patrick Browne. Schreb. 730. Browne Jan. 208. Swartz Prodr. 61. Class and order, *Polygamia Monœcia*. Schreb. rather *Octandria Monogynia*.

Gen. Ch. Perfect Flowers, Cal. Perianth of five (seldom four) ovate, concave, spreading, deciduous leaves, two of which are less than the rest. Cor. Petals five, ovate, a little less than the calyx, deciduous, with a nectariferous cell about the germen. Stam. Filaments eight, spreading, placed round the base of the germen, the length of the corolla; anthers ovate-cordate. Pist. Germen globose, superior; style short, erect; stigma deflexed, triangular, three-furrowed, acute. Peric. Drupa pulpy, roundish. Seed. Nut oval, very smooth; kernel solitary. Male Flowers on the same tree, but in a distinct panicle. Cal. Cor. and Nest. the same as in the perfect flowers, from the middle of which last arise the Stam. Filaments eight, converging at the base, either erect, reflexed or ascending, broader at the base; anthers ovate-cordate. Pist. The triangular rudiment of a germen; style awl-shaped, very small.

Eff. Ch. Calyx five-leaved. Corolla of five petals. Stigma bent down, triangular. Drupa single-seeded.

1. *H. trifoliata*. Swartz Prodr. 61. Browne Jan. 208. (Cytisus arboreus, foliis obtusis glabris; Sloane Jam. v. 2. 33.) Found at Jamaica by the river-side under the town and on the red hills very plentifully. This tree has many trunks, each about four or five inches in diameter, covered with a smooth cinnamon-coloured bark. Branches upright. Leaves always three together at the end of a common footstalk, of a yellowish green colour, very smooth, having one middle rib, and some transverse ones. Dr. Browne observes that it is full of slender branches, and furnished with many leaves of the same texture and grain with those of *Lignum Vitæ*, but remarkably different in form and disposition. He never saw the fruit in a perfect state.

HYPENEMIUS, an epithet applied by authors to barren eggs, or such as a hen lays before she has been trod by the cock. They are also called *zephyria ova*, and had both these names from the winds being supposed to generate them.

HYPER, a Greek word used in the composition of divers terms derived from that language.

The Greek preposition *υπερ*, *hyper*, literally signifies above, beyond; and in composition it expresses some excess, or something beyond the signification of the simple word it is joined with.

HYPER, *Supra*, below. See EPI.

HYPER-ÆOLIAN, the penultima in the acute of the fifteen modes in Greek music, of which the fundamental or key-note was a fourth above the Æolian mode. Neither the hyper-æolian, nor the hyper-lydian mode was so ancient as the rest; nor is either of them mentioned by Aristoxenus;

Aristoxenus; and Ptolemy, who admitted only seven modes, comprehended neither of them in his list.

HYPERANTHERA, in *Botany*, from ὑπερ, upon, and ανθηρα, an anther, so named by Forskall, in allusion to the superior length or projection of two of the stamens. Forsk. *Egypt. Arab.* 67. Willd. *Sp. Pl.* v. 2. 535. Vahl. *Symb.* v. 1. 30. (Anoma; Loureir. *Cochinch.* v. 1. 278. Moringa; Schreb. 741. Burmann. *Zeylan.* t. 75. Juss. *Gen.* 348. Lamarck. *Illustr.* t. 337.) Class and order, *Decandria Monogynia*. Nat. Ord. *Lomentaceæ*, Linn. *Leguminosæ*, Juss.

Gen. Ch. *Cal.* Perianth of one leaf, in five deep segments, inferior. *Cor.* irregular, of five obovate petals, inserted betwixt the segments of the calyx: the upper one largest. *Stam.* Filaments 10, awl-shaped, unequal; anthers roundish, some of them often imperfect. *Pist.* Germen linear, superior; style longer than the stamens; stigma simple. *Peric.* Pod long, straight, pulpy, of one cell, and three rugose, spongy valves. *Seeds* numerous, roundish, with three wings.

Ess. Ch. Calyx in five deep segments. Petals unequal, inserted into the calyx. Legume long, straight, of three valves. Seeds winged.

Obs. The last species has a bivalve legume, and seeds without wings.

1. *H. decandra*. Willd. n. 1. (Anoma Moringa; Loureir. *Cochinch.*)—"Flowers decandrous. Leaves bipinnate; lower leaflets ternate. Legumes somewhat octagonal."—A native of many parts of India; observed by Loureiro at Bengal. This tree is of a middling size. Branches spreading. Leaves alternate, unequally bipinnate; leaflets obovate, smooth, entire. Flowers white, in scattered panicles. Legume awl-shaped. Seeds furnished with three membranous wings, and arranged in a straight and simple order along the valves.

2. *H. Moringa*. Willd. n. 2. (Anoma Moringa; Loureir. *Cochinch.* Guilandina Moringa; Linn. *Sp. Pl.* 546. Jacq. *Ic. Rar.* v. 3. t. 461.)—"Flowers semi-decandrous. Leaves bipinnate, lower leaflets ternate. Legumes triangular."—A native of Ceylon and Egypt. This species very nearly approaches the last in size and habit, but its leaves are opposite, and flowers less brilliant. Legume more than a foot long, triangular, sometimes square. Seeds triangular and winged, disposed in a single row; these are the "Ben-nuts," formerly much used by perfumers for their oil, which absorbs and retains scents very powerfully.

3. *H. femidecandra*. Willd. n. 3. Vahl. *Symb.* v. 1. 30.—"Flowers semi-decandrous. Leaves bipinnate, simply pinnate at the top."—A native of Arabia. Leaves unequally bipinnate, consisting of six or eight pair of opposite leaflets, on short stalks, larger by degrees towards the top, remote, smooth. Flowers in paniced clusters. The common and partial flower-stalks alternate.

4. *H. cochinchinensis*. Willd. n. 4. (Anoma cochinchinensis; Loureir. *Cochinch.*)—"Flowers semi-decandrous. Leaves bipinnate, downy. Legumes two-valved. Seeds naked."—Found in the woods of Cochinchina. A tree about ten feet high with ascending branches. Leaves opposite, unequally bipinnate; leaflets nearly ovate, downy. Flowers white, in scattered panicles. Legume oblong, somewhat compressed, attenuated at either end.

HYPERBATON, or **HYPERBASIS**, in *Grammar* and *Rhetoric*, is a transposition, or a figurative construction, inverting the natural and proper order of the terms of a discourse.

The word is ὑπερβατον, or ὑπερβασις, derived of ὑπερβαινω, *transgredior*, I go beyond; formed of ὑπερ, ultra, beyond, and βαινω, eo, I go.

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The hyperbaton, Longinus observes, is no other than a transposal of sentiments, or words, out of the natural order and method of discourse, and always implies great violence, or strength of passion, which naturally hurries a man out of himself, and distracts him variously. Thucydides is very liberal in hyperbatons.

Quintilian calls the hyperbaton *verbi transgressio*. It is of use to enliven and animate the discourse: it is very proper to express a violent passion, and represent an agitation of mind in the liveliest manner.

HYPERBIBASMUS, ὑπερβιβασμος, in *Rhetoric*, a figure which inverts the order of construction. Cornelius Nepos gives an instance of it in his life of Chabrias: "Athenienses diem certam Chabriæ præstituerunt, quam ante domum nisi redisset, &c. for ante quam."

HYPERBOLA, in *Geometry*, one of the Conic Sections, is formed by the common section of a plane and a conic surface, when the cutting plane neither meets the whole contour of the cone, nor is parallel to a plane that touches the conic surface.

A plane, such as we have just described, being indefinitely extended, will likewise cut the opposite conic surface, and the common section will be another hyperbola perfectly similar to the former one. The two curves, formed by the intersection of the same plane, with two opposite conic surfaces, are called opposite sections, or opposite hyperbolas.

For the definitions relating to the hyperbola, and opposite hyperbolas, we must refer to the article **CONICS**; as we must likewise do for the chief properties which these curves have in common with the other conic sections: in this place we intend to treat of the more noted properties peculiar to the particular curves under consideration.

1. If a parallelogram be completed by drawing parallels to the asymptotes of an hyperbola from any point in the curve, that parallelogram will be constantly of the same magnitude.

Let CA, CB (*Plate X. Conics, fig. 1.*) be the asymptotes of an hyperbola, and let two parallelograms CPMQ, Cpmq, be formed by drawing parallels to CA, CB, through M and m, any two points in the curve: these parallelograms are equal. Let two lines, GF and HK, parallel to one another, be drawn through M and m to cut the asymptotes. Then by similar triangles,

$$GM : MP :: Hm : mp,$$

$$FM : MQ :: Km : mq.$$

Therefore, $GM \times MF : PM \times MQ :: Hm \times Km : mp \times mq.$

But (*Cor. 27. Con.*) $GM \times MF = Hm \times Km.$

Therefore $MP \times MQ = mp \times mq.$

Therefore the parallelograms CPMQ, Cpmq, are equal (*23. 6. E.*)

Cor.—If MP, a parallel to one asymptote, meet the other asymptote in P, then the rectangle CP × PM is constantly of the same magnitude.

2. A triangle formed by two asymptotes of an hyperbola, and a tangent of the curve which meets them, is constantly of the same magnitude.

Let a tangent of a hyperbola cut the asymptotes CA, CB (*fig. 1.*); from the point of contact M, draw MP parallel to CB, and MQ parallel to CA; then the line TS will be bisected in M (*21. Con.*); hence it is plain that the triangle CTS is the double of the parallelogram CPMQ, and consequently the triangle is constantly of the same magnitude (1).

3. *Lemma.*—Let DE (*fig. 2.*) be parallel to AC, one side of a triangle, then the line BF, drawn from the angle opposite

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opposite to AC, through O, the intersection of AE and DC, will bisect AC.

Let BF cut DE in G. Then, because the parallels DE and AC are cut by three lines drawn through B,

$$DE : EG :: AC : CF.$$

And because the same parallels are cut by three lines drawn through O,

$$DE : EG :: AC : AF.$$

Therefore (11. 5. E.)

$$AC : CF :: AC : AF.$$

Consequently (9. 5. E.) $AF = FC$.

4. A straight line drawn from the intersection of two tangents of an hyperbola (figs. 3. and 4.), or opposite hyperbolas, through the centre, will bisect the line drawn between the points of contact.

Let TM and TN be two lines touching an hyperbola, or opposite hyperbolas in M and N; then TC, drawn through the centre, will bisect MN. Let the line which touches the curve in M meet the asymptotes in G and H; and the line touching in N, meet the same lines in K and L; join HK and GL. Then the two triangles GCH and LCK are equal (2); take away, or add, the triangle KCH, and the two triangles KGH and KLH will likewise be equal: therefore KH is parallel to LG (39 1. E.); and MN, which bisects HG and KL (21. Con.), will likewise be parallel to KH and GL (2. 6. E.) Now TC will bisect GL (Lem.), therefore it will also bisect MN parallel to GL.

5. If a tangent of an hyperbola meet a diameter, and an ordinate be applied to the same diameter from the point of contact; then the semi-diameter will be a mean proportional between the segments lying between the centre and the tangent, and the centre and the ordinate.

First let a tangent HB (figs. 5. and 6.) meet a transverse diameter CA, and let HF be an ordinate to the same; draw AM a tangent of the curve to meet BH in M; draw HA and CM cutting AH in O, and HF in N; join AN. Because AH is bisected in O (4), and AM parallel to HF (1. Cor. 16. Con.), it is manifest that AMHN is a parallelogram. Because AM is parallel to HF, therefore

$$CM : CN :: BA : BF.$$

And because AN is parallel to BH, therefore

$$CM : CN :: CB : BA.$$

Consequently (11. 5. E.)

$$CB : BA :: BA : BF.$$

Secondly, let the tangent HB and ordinate HF be drawn to a second diameter CA; draw the diameter CD, conjugate to CA, and therefore parallel to HF; draw also HT parallel to CA, and therefore an ordinate to CD; let HB cut CD in S.

Then (29. Con. et alternando)

$$CA : CA^2 + CF^2 :: CD^2 : HF^2.$$

But, on account of similar triangles,

$$CB : BF :: CS : HF, \text{ or } CS \times HF : HF^2.$$

But, by the first case, $CS \times HF = CS \times CT = CD^2$; therefore (11. 5. E.)

$$CA^2 : CA^2 + CF^2 :: CB : BF.$$

Convertendo $CA^2 : CF^2 :: CB : CF$, or $CB \times CF : CF^2$;

$$\text{therefore } CA^2 = CB \times CF.$$

6. The difference of the squares of any two conjugate diameters of an hyperbola, is equal to the difference of the squares of the two axes.

Let CD (fig. 7.) be the transverse axis of an hyperbola, and CM any other transverse diameter, and draw the tangents BDE, PMQ, limited by the asymptotes; also draw

CR from the centre perpendicular to PQ. Then because the triangles BCE and PCQ are equal (2), the rectangles $BC \times CE$ and $PC \times CQ$ will also be equal (23. 6. E.); but,

$$\left. \begin{aligned} 2 BC \cdot CE &= BC^2 + CE^2 - BE^2 \\ 2 PC \cdot CQ &= PC^2 + CQ^2 - PQ^2 \end{aligned} \right\} (12 \ \& \ 13. \ 2. \ E.)$$

therefore $BC^2 + CE^2 - BE^2 = PC^2 + CQ^2 - PQ^2 =$

(because BE and PQ are bisected in D and M (21. Con.))

$$2 CD^2 - 2 BD^2 = 2 CM^2 - 2 MP^2. \text{ Therefore}$$

$$CD^2 - BD^2 = CM^2 - MP^2,$$

and BD is half the conjugate axis, and MP half the diameter conjugate to CM.

7. If a parallelogram be completed by drawing straight lines through the extremities of two conjugate diameters of opposite hyperbolas, so as to be parallel to the diameters themselves, that parallelogram will be constantly of the same magnitude, and equal to the rectangle contained by the two axes.

Let MN and PQ (fig. 8.) be two conjugate diameters of opposite hyperbolas, and let the parallelogram FHKG be formed by drawing parallels to MN and PQ through the extremities of the same lines; then, because HM and MK, as well as FN and NG, are all equal to PC or CQ (Def. 16. Con.); and HK and FG, both parallel to PQ, are tangents of the hyperbolas; it is plain that the four angular points of the parallelogram will be upon the asymptotes of the curves (Def. 16. Con.); therefore the triangle HCK is always of the same magnitude (2); and consequently the parallelogram FHKG, which is quadruple of the triangle, is likewise constantly of the same magnitude. And the same parallelogram is equal to the rectangle contained by the axes; because the parallelogram becomes a rectangle when the conjugate diameters MN and PQ become the two axes of the hyperbolas.

8. If NE and MF (fig. 9.), two tangents of opposite hyperbolas, be both parallel to the semi-diameter CP, and be intersected by a third tangent DEF, which cuts them in E and F; then $CP^2 = NE \times MF$; and if the semi-diameter CQ be parallel to the tangent DEF; then $CQ^2 = DE \times DF$.

Join MN, which will pass through the centre C (Cor. 18. Con.), and draw DO parallel to NE and MF, and DR parallel to MN. Then MC and CP are conjugate semi-diameters, and DO is an ordinate to MC, and DR an ordinate to PC; therefore

$$OC : CN :: CN : CL \quad (5)$$

Convertendo et Alternando, $ON : NL :: CN : CL$

Componendo $OL : LN :: ML : CL$

therefore, by similar triangles

$$OD, \text{ or } RC : NE :: MF : CS;$$

Consequently $MF \times NE = RC \times CS = CP^2$ (5).
Again,

$$DE : EN :: CQ : CP \quad (\text{Cor. 1. 28. Con.})$$

$$DF : MF :: CQ : CP;$$

therefore $DE \times DF : MF \times EN :: CQ^2 : CP^2$

and because $MF \times EN = CP^2$

$$\text{therefore } DE \times DF = CQ^2.$$

9. Two straight lines MF and Mf (fig. 10.), drawn from any point in the curve of an hyperbola, make equal angles with the tangent MT drawn from the same point.

Let MT meet the transverse axis in T, and draw MK perpendicular to the same axis produced. Then

$$Mf^2 - MF^2 = fK^2 - KF^2 \quad (47. 1. E.)$$

that is, $(Mf + MF) \times (Mf - MF) = fK \times (fK + KF)$;

but

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but $Mf - MF = 2AC$ (42. Con.), $fK + KF = 2CK$;

$$\text{therefore } AC \times \frac{Mf + MF}{2} = CF \times CK:$$

$$\text{Consequently, } AC : CF :: CK : \frac{MF + Mf}{2};$$

$$\text{but (5), } CT : CA :: CA : CK,$$

$$\text{ex æquo, } CT : CF :: CA, \text{ or } \frac{Mf - MF}{2} : \frac{Mf + MF}{2}:$$

and, componendo et dividendo

$$fT : TF :: Mf : MF.$$

Therefore (3. 6. E.) MT bisects the angle $F'Mf$.

10. If MP (fig. 10.) touch an hyperbola, and MF be drawn from the point of contact to either focus; then CP , drawn from the centre parallel to MF , and limited by the tangent, will be equal to AC , half the transverse axis.

Draw Mf to the other focus, and draw fP meeting MF , produced if necessary, in H : because $fC = FC$, and CP is parallel to FH , therefore $fP = PH$: consequently, since MP bisects the angle fMF (9), $MH = Mf$ (3. 6. E.): therefore $FH = Mf - MF = AB$ (42. Con.); and $CP = \frac{1}{2}FH = AC$.

Cor. 1.—The line fP will be perpendicular to the tangent MP .

For MP , which bisects the vertical angle of the isosceles triangle fMH , will cut the base MH at right angles.

Cor. 2.—If fP and Fp be drawn from the two foci perpendicular to a tangent of the hyperbola, the points P and p will be in the circumference of the circle described upon the transverse axis as a diameter.

11. The rectangle under FP and fP (fig. 10.), two perpendiculars drawn to any tangent of the curve, is equal to the square of half the conjugate axis.

For the points P and p are in the circumference of the circle described upon the greater axis AB ; therefore if fP meet the circle again in O , the segment OPp , which contains a right angle, will be a semi-circle, and OC and Cp will be one straight line, and the triangles fCO and $F Cp$ will be equal, and $AO = pF$. But $Pf \times fO = Pf \times Fp = fA \times fB = fC^2 - CA^2 = \text{square of half the conjugate axis}$ (Def. 23. Con.).

12. A straight line TF , (fig. 11.) drawn from the intersection of two tangents of an hyperbola, or opposite hyperbolas, to one of the foci, will make equal angles with the lines MF and NF drawn from the points of contact to the same focus.

Draw Mf , Nf to the other focus, and in MF , NF , produced, if necessary, take $MQ = Mf$, and $NP = Nf$; and join Tf . Because TN bisects the angle fNF (9), and $Nf = NP$, therefore $TP = Tf$ (4. 1. E.): for a like reason $TQ = Tf$: therefore $TP = TQ$; because $PF = NF - Nf$, and $FQ = Mf - MF$, therefore $PF = FQ$ (42. Con.) Hence it is plain that the angle $TFN = \angle TFQ$ (8. 1. E.)

Cor. 1.—The angles which TF makes with one tangent, are equal to the angles which Tf makes with the other tangent.

For the triangles MTf and MTQ are equal, and the angle $MTf = \angle MTQ$; also, the angle $FTP = \angle FTQ$.

And taking the differences of these equals,

$$fTP - MTF = MTF;$$

$$\text{therefore } fTP = 2NTf = 2MTF.$$

$$\text{And } NTf = MTF$$

$$MTF = NTF.$$

Cor. 2.—If two tangents of an hyperbola, drawn from the

extremities of a chord passing through the focus, meet in T (fig. 12.); then TF will be perpendicular to the chord MN . For the angles MFT , NFT , are in all cases equal; and when MF and FN become one right line, each of the angles is a right angle.

13. If MN (fig. 12.) be any chord drawn through the focus of an hyperbola, and PQ , likewise drawn through the focus, be ordinately applied to the transverse axis, then $4MF \times FN = MN \times PQ$.

Draw MS , NR , perpendicular to the transverse axis, and NG , PH , MK , perpendicular to the directrix that corresponds to the focus F . Then (43. Conics)

$$PF : PH, \text{ or } FL :: MF : MK \text{ or } LS$$

$$(17. 5. E.) PF : PH :: MF - PF : FS;$$

$$\text{in like manner, } PF : PH :: PF - FN : FR$$

$$(11. 5. E.) \text{ and alternando, } MF - PF : PF - FN :: FS : FR.$$

$$\text{By similar triangles, } FS : FR :: MF : FN;$$

$$\text{therefore } MF - PF : PF - FN :: MF : FN;$$

$$\text{and } (MF - PF) \times FN = (PF - FN) \times MF;$$

$$\text{whence } 2MF \times FN = MN \times PF,$$

$$\text{and } 4MF \times FN = MN \times PQ.$$

14. If a tangent of an hyperbola, as DE (Plate XI. fig. 13.), intersect two perpendiculars drawn from the extremities of the transverse axis in the points D and E ; then two right lines, drawn from these points to one of the foci, as F , will contain a right angle.

Draw FM to the point in which DE touches the curve, and produce FM to S : then, because DB and DM are tangents, therefore the angle $DFM = \angle DFB$ (12). And, in like manner, because AE and EM are tangents, the angle $AFE = \angle EFS$: therefore the angle EFD is half the sum of the angles AFS and AFM , or a right angle.

Of Conjugate Hyperbolas.—It has been proved, that if MN (fig. 14.), limited by the asymptotes of an hyperbola, touch the curve in P , then MN will be bisected in P (21. Con.), and the triangle $M CN$ will be constantly of the same magnitude: whence it follows that, supposing MN to be drawn so as to make the triangle $M CN$ always of one constant magnitude, the middle point P of MN will be constantly in the curve of an hyperbola, of which CP and CQ (CQ being parallel and equal to PM) are conjugate semidiameters, and the lines CM and CN are the asymptotes. Draw MG , in the angle adjacent to $M CN$, to pass through Q ; then the triangle $M CG$ will be equal to the triangle $M CN$, and Q will be the middle of MG : therefore, according to what has been observed, Q will always be found in the curve of an hyperbola, of which MG is a tangent, and MC and CG are the asymptotes: and this hyperbola is so related to the first one, that the terminations of the second semidiameters of the one curve are in the other curve, as is plain from what has already been said. Four hyperbolas, comprehending the two we have been describing, and their corresponding opposite hyperbolas are called *conjugate hyperbolas*: such curves lie in opposite angles of the same asymptotes, and the extremities of the second diameters of two of the opposite hyperbolas are in the two remaining opposite hyperbolas.

The most remarkable properties of conjugate hyperbolas are as follows:

1. The second diameters of two of the opposite hyperbolas are all transverse diameters of the other two.

2. Two conjugate diameters of two of the opposite hyperbolas are also conjugate diameters of the other two curves.

3. If a parallelogram $FHCL$ be completed, by drawing parallels to the asymptotes through any point in one of

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four conjugate hyperbolas, as F, that parallelogram will be constantly of one and the same magnitude.

For such a parallelogram will be equal to one-fourth of the triangle M C N, or to one-fourth of the triangle M C G, which is equal to M C N.

4. And hence, if from any point F, in one of the curves, F H be drawn parallel to one asymptote to meet the other; then $CH \times HF$ will be constantly of the same magnitude.

5. A line F K, terminated by two adjacent hyperbolas, and parallel to one asymptote, is bisected by the other asymptote.

For $CH \times HF = CH \times HK$.

It may be remarked, that while opposite hyperbolas must be regarded as two different branches of the same curve, conjugate hyperbolas are two different curves, possessing, indeed, some analogous properties, but really unconnected by the law of continuity. For, in the first place, when a plane cuts two opposite conic surfaces, it produces no more than two opposite hyperbolas, without the smallest trace of the conjugate hyperbolas. And in the next place, if we consider the hyperbola as it is determined by an algebraic equation, no such equation can be found that, preserving the same system of the co-ordinates, will comprehend all the four conjugate hyperbolas. Let the curves be defined by two rectangular co-ordinates x and y , parallel to the two axes; then if, in the equation which belongs to two opposite hyperbolas, the ordinate x be necessarily greater than y , in the equation of the two conjugate hyperbolas, the same ordinate x will necessarily be less than y ; a circumstance which plainly excludes the two latter curves from the equation that defines the two first. Again, if we define the curves by means of two co-ordinates x and y , parallel to the asymptotes, which leads to this equation, $a \times b = x \times y$; then, making x and y both positive in one of the angles of the asymptotes, they will become $-x$ and $-y$ in the opposite angles; and in the two angles adjacent to these, they will be x and $-y$, and $-x$ and y : now, the equations $a \times b = x \times y$, and $a \times b = -x \times -y$, which belong to the two opposite hyperbolas, are consistent with one another, but they are both inconsistent with the equations $a \times b = x \times -y$, and $a \times b = -x \times y$, which would belong to the conjugate hyperbolas, if the same system of the co-ordinates were preserved.

Of the Description of a Hyperbola in Plano.—1. When the transverse axis and the two foci are given (fig. 15.), any number of points in the opposite hyperbolas may be thus found: Take any point O, in the transverse axis produced beyond the foci, and describe a triangle upon Ff (22. 1. E.), that shall have its sides respectively equal to the distances of O from A and B, the vertices of the transverse axis; then the vertex of this triangle, M or m, will be in one of the hyperbolas: and in this way, may as many points in both curves be found as shall be thought necessary.

When the two axes are given, the foci may be readily found (Cor. Def. 23. Con.), and then the curves may be described by this method.

2. A hyperbola that has its two axes equal to one another, and the angle of the asymptotes equal to a right angle, is called an equilateral hyperbola: such a curve may be thus described, by finding an indefinite number of points. Let A B = D d be the two semi-axes; in A B, produced either way, assume any point O, and, having drawn an indefinite perpendicular through O, cut C O in L with a circle described from the centre D with the radius C O, and set off

O P, o p upon the perpendicular, each equal to C L; then will P and p be points in one of the opposite curves.

3. When the two foci f and F, and the transverse axis A B (fig. 16.) are given, the hyperbola may be described by the following mechanical contrivance. Provide a straight ruler, and let it be made to turn round one focus f , so as to have its straight edge fE always directed to f ; take a thread, which is shorter than the whole length of the ruler, by the length of the transverse axis A B, and having fixed one end of the thread in the other focus F, attach the other end to the extremity of the ruler at E: then if the ruler be turned round about f , while the thread is stretched tight by a pin P which slides along the straight edge of the ruler, the point of the pin will trace the hyperbola required. For the excess of fP above P F is equal to the excess of the whole ruler above the whole length of the thread; that is, to the transverse axis A B.

4. When the directrix A M (fig. 17.), the corresponding focus F, and the vertex V are given; from V, as a centre with the distance V F, describe a circle, and it will cut the directrix in a point, as H; for F V A cuts the directrix at right angles, and V F is greater than V A (43. Con.): join V H, and provide a ruler M E N, with two straight edges, making an angle equal to the angle V H A, and place it on the same side of the directrix M A with the focus F, so that the edge M E may be in the direction of M A, and the other edge E N may be turned toward F; fix one end of a thread, which is equal in length to E N in F, and attach the other end to N: then, if the thread be stretched tight by a pin P, which slides along E N, the point of that pin will describe the hyperbola required. For, draw P R perpendicular to the directrix, then P E = P F; and, because the angles M E N and A H V are equal, by similar triangles

$$P E \text{ or } P F : P R :: V H \text{ or } V F : V A.$$

Therefore P describes the hyperbola required (43. Con.).

Of the Area of the Hyperbola.—In the treating of the ellipse we have shewn that the area of a whole ellipse, or of any segment of it, has to the area of the whole circle described on the transverse axis, or to the corresponding segment of that circle, the same proportion that the conjugate axis has to the transverse axis; and the same reasoning by which this was proved will apply equally to any two curves whatever which have their ordinates answering to the same absciss every where in the same proportion: whence it follows, that the constant proportion of the co-ordinates will be that of the areas taken between the same limits. Now, if we suppose any number of hyperbolas to be described upon the same transverse axis, then, as it is easy to prove, the ordinates of these curves drawn to the common axis, and answering to the same absciss, will be proportional to the second axis of the several curves: and therefore, according to what has been observed, the hyperbolic areas cut off by the ordinates will be proportional to the second axis. This proposition does not, indeed, enable us to square the hyperbolic spaces: but we learn from it that the problem will be accomplished generally for all hyperbolas, if we can find the quadrature of any one in particular, as the equilateral hyperbola, which is the simplest of all.

In farther treating of the quadrature of the hyperbola, we shall consider the area contained between the curve and its asymptote, and shall begin with shewing that the spaces comprehended between the ordinates are the measures of the ratio of the absciss taken on the asymptotes; in other words, that the asymptotic spaces are the logarithms of the abscisses.

1. If through F and G (fig. 18.) two points assumed in a hyperbola, two ordinates T H and G K be drawn parallel

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to one asymptote to cut the other in H and K; then the hyperbolic sector FCG will be equal to the mixtilinear space FHKG.

For the triangle CFH will be equal to the triangle CGK, and when these are taken from the space CFGK, the remainders, which are the sector FCG and the space FHKG, will likewise be equal.

2. If the abscissæ CH, CK, CM, be taken in continued proportion, the asymptotic spaces FHKG, GKML will be equal.

Draw FL, CF, CG, CL, and let CG cut FH in N, FL in O, and ML produced in P. Because CH, CL, CM are in continued proportion, therefore HN, GK, and PM will also be in continued proportion. Again,

$$LM : KG :: CK : CM \text{ (Cor. 1.)}$$

by similar triangles, GK : MP :: CK : CM;

$$\text{therefore } LM : KG :: GK : MP.$$

And, because HN, KG, and PM were before shewn to be in continued proportion, therefore LM = HN. In like manner, it may be shewn that FH = PM. Therefore PL = FN, and FL will be bisected in O. Therefore every line drawn in the hyperbola parallel to FL will be bisected by the diameter CG (15. Con.): and hence it is easy to infer that the hyperbolic segment cut off by FL will be bisected by GO. And because CO likewise bisects the triangle FCL, it is plain that the sectors FCG and GCL are equal; and consequently so are the spaces FHKG and GKML, which are equal to the sectors.

3. If the ratio of the abscissæ CG and CH (fig. 19.) be equal to the ratio of the abscissæ CD and CF; then will the asymptotic spaces KGH L and EDF I, comprehended between the ordinates, be equal.

For if we take CS a mean proportional between CG and CF, it will also be a mean proportional between CH and CD. Therefore the space KGRS = space RSFI, and the space LHR S = space RSED: consequently the space KGH L = space EDF I.

4. The asymptotic spaces comprehended between the ordinates are the measures of the ratios of the abscissæ.

Let the ratio of CB to Cm be a small ratio, and suppose that of CG to CF to be an exact multiple of the ratio of CB to Cm: then, according to what has been shewn, it is plain that the asymptotic space KGF I will be the like multiple of the space ABmn. Now, the ratio of CB to Cm may be taken so small that all other ratios may be considered as exact multiples of it; and then the corresponding hyperbolic spaces will be the like multiples of the area ABmn: which proves what was proposed.

What has here been demonstrated of the abscissæ and the asymptotic spaces is exactly the same relation that subsists between numbers and their logarithms: and therefore if the abscissæ be taken to represent the series of natural numbers, the hyperbolic spaces comprehended between the ordinates will be proportional to the logarithms of the numbers.

5. Supposing the abscissæ to be given, it is proposed to investigate a series for the asymptotic space in the equilateral hyperbola.

The vertex of the hyperbola being at A; let the ordinate AB = BC = 1, BF = x, and put z to represent the hyperbolic area ABFI: between CB and CF interpose as many mean proportionals Cm, Cp, &c. as there are units in the whole number denoted by i: then, according to what has been proved, all the spaces ABmn, m n G K, &c. of which the number is i, will be equal; and therefore, the

space ABmn = $\frac{z}{i}$: but, because CF = 1 + x, there-

fore Cm = $(1+x)^{\frac{1}{i}}$; and Bm x BA = $(1+x)^{\frac{1}{i}} - 1$: now when i is a very great number, and consequently Bm very small, the rectangle Bm x BA may be considered as equivalent to the hyperbolic space ABmn; therefore $\frac{z}{i} =$

$(1+x)^{\frac{1}{i}} - 1$; and $z = i \times \left\{ (1+x)^{\frac{1}{i}} - 1 \right\}$; and by expanding the radical by the binomial theorem, we get

$$z = x - \frac{i-1}{2i} \cdot x^2 + \frac{i-1}{2i} \cdot \frac{2i-1}{3i} \cdot x^3 - \&c.$$

This expression of the value of z is greater than the truth for all values of i, but it differs less and less from the truth as i is taken greater and greater; and therefore, by taking the limit to which the expression constantly approaches as i increases, we shall have accurately

$$z = x - \frac{1}{2} x^2 + \frac{1}{3} x^3 - \frac{1}{4} x^4 + \&c.$$

This is the series which Mercator invented for the quadrature of the hyperbola, and which he published (in 1667) in his Logarithmotechnia. If the area denoted by z lie on the other side of AB, and Bf = x, then it may be shewn, in the same manner as before, that $z = i \times \left\{ 1 - (1-x)^{\frac{1}{i}} \right\}$:

and, by expanding and taking the limit we shall get

$$z = x + \frac{1}{2} x^2 + \frac{1}{3} x^3 + \frac{1}{4} x^4 + \&c.$$

This series, which may appear to be a very easy extension of Mercator's invention, was first given by Dr. Wallis of Oxford, in a letter to lord Brouncker, published in the third volume of the Philosophical Transactions.

The same investigation will apply to any hyperbola (fig. 20.): for preserving the same denominations as before, we still have the space ABmn = $\frac{z}{i}$; and if m denote the

sine of the angle of the asymptotes, then the space ABmn = m x AB x mB = m x $\left\{ (1+x)^i - 1 \right\}$; there-

fore $z = m \times i \times \left\{ (1+x)^{\frac{1}{i}} - 1 \right\}$; whence

$$z = m \times \left\{ x - \frac{1}{2} x^2 + \frac{1}{3} x^3 - \frac{1}{4} x^4 + \&c. \right\}$$

And in like manner when the area is on the other side of the ordinate AB, we shall have

$$z = m \times \left\{ x + \frac{1}{2} x^2 + \frac{1}{3} x^3 + \frac{1}{4} x^4 + \&c. \right\}$$

It readily follows from what has been proved, that, in different hyperbolas (figs. 19 and 20.), if we take CF to CB in the same proportion, the asymptotic spaces ABFI, or the equivalent sectors ACI, will be proportional to the sines of the angles formed by the asymptotes: this supposes that BC is unit in all the hyperbolas; when this is not the case, the space of every hyperbola will be proportional to the square of BC multiplied by the sine of the angle of the asymptotes, or, which is an equivalent space, to half the product of the two axes of the curve.

It has already been remarked that the hyperbolic trapeziums, or sectors, bear the same relation to the corresponding abscissæ, that the logarithms of numbers do to the numbers themselves; and by taking m, or the sine of the angle contained by the asymptotes of a proper magnitude, the hyperbolic trapeziums or sectors will be measured by the very same numbers as the logarithms in any proposed system. Thus in the equilateral hyperbola, when m = 1, the hyperbolic spaces agree in numerical value with the logarithms

HYPERBOLA.

arithms of Napier's system; and if $m = .434294$, the hyperbolic spaces will be equivalent to the logarithms of Briggs's system, which are those contained in the tables in common use. From what has now been said we derive an easy rule for computing the area of any hyperbola by means of a table of logarithms. Let the semi-transverse axis of an hyperbola = a (fig. 20.), the semi-conjugate $AY = b$, the absciss of the transverse $CX = y$; then the ordinate $XI = \frac{b}{a} \sqrt{y^2 - a^2}$; and if XI cut the asymptotes in O and E , then $XO = \frac{b}{a} \times y$; therefore $IO = \frac{b}{a} \times (y + \sqrt{y^2 - a^2})$: now

$$IE : EF :: AY : BY, \text{ or } BC :: OI : CF;$$

therefore $\frac{OI}{AY} = \frac{OI}{b} = \frac{y + \sqrt{y^2 - a^2}}{a} = \frac{CF}{BC} = \text{value of}$

CF when BC is unit: then the hyperbolic trapezium $ABFI$, or the equivalent sector ACI , will be equal to

$$\frac{a \times b}{2} \times \text{Napier's logarithm of } \frac{y + \sqrt{y^2 - a^2}}{a};$$

or if $M = .434294$, the same space will be equal to

$$\frac{a \times b}{2M} \times \text{Briggs's logarithm of } \frac{y + \sqrt{y^2 - a^2}}{a}.$$

With regard to the area XAI , it is the difference of the triangle ICX and the sector ACI .

Napier's logarithms, which are expressed by the sectors, or asymptotic trapeziums of an equilateral hyperbola, in which CB is unit, have obtained the appellation of hyperbolic logarithms: but they do not seem to be better entitled to this name than Briggs's logarithms, which are equivalent to the sectors, or asymptotic trapeziums of the hyperbola, in which BC is unit, and the sine of the angle of the asymptotes = $.434294$. Nay, what is more, the latter sort of logarithms may be expressed by the areas of an equilateral hyperbola, as well as the former: for this purpose we have only to make $BC = \sqrt{.434294}$; and the sector ACI , or the trapezium $ABFI$, will be equal to Briggs's logarithm of the number equal to $\frac{CF}{BC}$.

6. We shall now finish what we have to say on the quadrature of the hyperbola with considering the inverse problem, for determining the absciss when the hyperbolic area is given; or, which is the same thing, for determining the number when the logarithm is given. Now, according to what has already been shewn, we have, in a hyperbola that has the sine of the angle of the asymptotes = m , $z =$

$$m \times i \times \left\{ (1 + x)^{\frac{1}{i}} - 1 \right\}: \text{ therefore } 1 + x = \left(1 + \frac{1}{i} \cdot \frac{z}{m} \right)^i;$$

and, by expanding by the binomial theorem, we get $1 + x = 1 + \frac{z}{m} + \frac{i-1}{2i} \cdot \frac{z^2}{m^2} + \frac{i-1 \cdot i-2}{2i \cdot 3i} \cdot \frac{z^3}{m^3} + \frac{i-1 \cdot i-2 \cdot i-3}{4i \cdot 3i \cdot 2i} \cdot \frac{z^4}{m^4} + \&c.$ This equation is not rigorously exact for any value of i , but it is the more nearly true, the greater is the number that i stands for; and therefore when we take the limit to which the series continually

approaches, we shall have accurately $1 + x = 1 + \frac{z}{m} + \frac{1}{1 \cdot 2} \cdot \frac{z^2}{m^2} + \frac{1}{1 \cdot 2 \cdot 3} \cdot \frac{z^3}{m^3} + \frac{1}{1 \cdot 2 \cdot 3 \cdot 4} \cdot \frac{z^4}{m^4} + \&c.$ And if the area z be taken on the other side of the ordinate AB ,

then, in like manner, $1 - x = 1 - \frac{z}{m} + \frac{1}{1 \cdot 2} \cdot \frac{z^2}{m^2} - \frac{1}{1 \cdot 2 \cdot 3} \cdot \frac{z^3}{m^3} + \frac{1}{1 \cdot 2 \cdot 3 \cdot 4} \cdot \frac{z^4}{m^4} + \&c.$

Of the Rectification of the Hyperbola.—1. Let CB (fig. 21.) the semi-transverse axis of an hyperbola, be unit, the distance of the focus from the centre $CF = e$; and consequently the semi-conjugate axis = $\sqrt{e^2 - 1} = CD$: let CP , an absciss of the transverse axis, = x ; the corresponding ordinate $MP = y$; and draw MT a tangent of the curve: then, by the property of the curve, we have

$$CB^2 : CD^2 :: CP^2 - CB^2 : PM^2; \\ \text{or } 1 : e^2 - 1 :: x^2 - 1 : y^2;$$

hence $y = \sqrt{e^2 - 1} \cdot \sqrt{x^2 - 1}$. Let the length of the arc BM of the hyperbola be denoted by H ; then

$$\dot{H} = \sqrt{\dot{x}^2 + \dot{y}^2} = \dot{x} \sqrt{1 + \frac{x(e^2 - 1)}{x - 1}} = \frac{\dot{x} \sqrt{e^2 x^2 - 1}}{\sqrt{x^2 - 1}}.$$

If the tangent MT cut the transverse in T , then $CT \times CP = CB^2$; hence $CT = \frac{1}{x}$; and $TP = x - \frac{1}{x} =$

$$\frac{x^2 - 1}{x}; \text{ therefore } MT = \sqrt{TP^2 + MP^2} =$$

$$\sqrt{\frac{(x^2 - 1)(e^2 x^2 - 1)}{x}}: \text{ Put } \tau = MT, \text{ then by taking}$$

the fluxions in the value of τ , we shall get

$$\dot{\tau} = \frac{\dot{x} \sqrt{e^2 x^2 - 1}}{\sqrt{x^2 - 1}} + \frac{\dot{x} \sqrt{x^2 - 1}}{x^2 \sqrt{e^2 x^2 - 1}};$$

$$\text{therefore } \dot{\tau} - \dot{H} = \frac{\dot{x} \sqrt{x^2 - 1}}{x^2 \sqrt{e^2 x^2 - 1}};$$

thus the rectification of the hyperbola is reduced to the investigation of the fluent of $\frac{\dot{x} \sqrt{x^2 - 1}}{x^2 \sqrt{e^2 x^2 - 1}}$, generated

while the absciss increases from unit to any indefinite value; for it is clear from what has been proved, that this fluent will express the difference between the hyperbolic arc MB and its tangent MT . And because a tangent of the hyperbola approaches indefinitely to the asymptote as the point of contact recedes from the vertex, we may likewise infer from what has been said, that the whole fluent generated while x increases from being equal to unit to be infinitely great, is equivalent to the excess of the asymptote above the curve, when both are indefinitely extended: this last case being the most interesting one of the problem, we shall principally have it in view in what we have farther to add on this subject.

Let $\sqrt{x^2 - 1} = \tan. \phi$, and while x increases from 1 to be infinitely great, the arc ϕ will increase from 0 to be a quadrant, or $\frac{\pi}{2}$ (τ denoting 3.14159 , &c.): then $x = \frac{1}{\text{cof. } \phi}$.

$$\sqrt{e^2 x^2 - 1} = \frac{\sqrt{e^2 - \text{cof.}^2 \phi}}{\text{cof. } \phi}; \text{ and } \dot{x} = \frac{\phi \text{ fin. } \phi}{\text{cof.}^2 \phi}; \text{ there-}$$

fore by substitution $\tau - H = \int \frac{\dot{x} \sqrt{x^2 - 1}}{x^2 \sqrt{e^2 x^2 - 1}} = \int \frac{\phi \text{ fin.}^2 \phi}{\sqrt{e^2 - \text{cof.}^2 \phi}}$; and, because $\text{fin.}^2 \phi = \frac{1}{2} - \frac{1}{2} \text{cof. } 2\phi$, and $\text{cof.}^2 \phi = \frac{1}{2} + \frac{1}{2} \text{cof. } 2\phi$, therefore

$$\tau - H = \frac{1}{2} \int \frac{\phi (1 - \text{cof. } 2\phi)}{\sqrt{e^2 - \frac{1}{2} - \frac{1}{2} \text{cof. } 2\phi}};$$

affume,

assume, $a^2 + b^2 = c^2 - \frac{1}{2}$, $2ab = \frac{1}{2}$; then $a + b = c$,

$$a - b = \frac{c + \sqrt{c^2 - 1}}{2}; \text{ and } a = \frac{c + \sqrt{c^2 - 1}}{2},$$

$$b = \frac{c - \sqrt{c^2 - 1}}{2}; \text{ consequently, } \sqrt{c^2 - \frac{1}{2} - \frac{1}{2} \cos. 2\phi}$$

$$= \sqrt{a^2 + b^2 - 2ab \cos. 2\phi} = \left(\text{putting } f = \frac{b}{a} \right)$$

$a \times \sqrt{1 + f^2 - 2f \cos. 2\phi}$: again, let

$$\Delta = \sqrt{1 + f^2 - 2f \cos. 2\phi}, \text{ then } \cos. 2\phi$$

$$= \frac{1 + f^2 - \Delta^2}{2f}; \text{ and } (1 - \cos. 2\phi) = \frac{\Delta^2}{f}$$

$$- \frac{1}{2} \cdot \frac{(1-f)^2}{f}; \text{ therefore } \tau - H = \frac{1}{2a}$$

$$\int \frac{\phi (1 - \cos. 2\phi)}{\sqrt{1 + f^2 - 2f \cos. 2\phi}} = \frac{1}{4af}$$

$$\left\{ \int \Delta \cdot \phi - (1-f)^2 \cdot \int \frac{\phi}{\Delta} \right\}; \text{ and, because } \frac{1}{4af} =$$

$$\frac{c + \sqrt{c^2 - 1}}{2}, \text{ and } \frac{(1-f)^2}{4af} = \frac{2(c^2 - 1)}{c + \sqrt{c^2 - 1}}, \text{ therefore}$$

$$\tau - H = \frac{c + \sqrt{c^2 - 1}}{2} \times \int \Delta \cdot \phi - \frac{2(c^2 - 1)}{c + \sqrt{c^2 - 1}}$$

$$\int \frac{\phi}{\Delta}$$

Now, let Δ and $\frac{1}{\Delta}$ be developed into series containing

the cosines of the multiples of 2ϕ ; as thus,

$$\Delta = A^{(0)} + A^{(1)} \cos. 2\phi + A^{(2)} \cos. 4\phi + \&c.$$

$$\frac{1}{\Delta} = B^{(0)} + B^{(1)} \cos. 2\phi + B^{(2)} \cos. 4\phi + \&c.;$$

then, taking the whole fluents from $\phi = 0$ to $\phi = \frac{\pi}{2}$, we

$$\text{have } \int \Delta \cdot \phi = A^{(0)} \times \frac{\pi}{2}, \text{ and } \int \frac{\phi}{\Delta} = B^{(0)} \times \frac{\pi}{2};$$

with regard to $A^{(0)}$ and $B^{(0)}$, they will be found by these series, viz.

$$A^{(0)} = 1 + \left(\frac{1}{2}\right)^2 \cdot f^2 + \left(\frac{1 \cdot 1}{2 \cdot 4}\right)^2 \cdot f^4 + \left(\frac{1 \cdot 1 \cdot 3}{2 \cdot 4 \cdot 6}\right)^2 \cdot f^6 + \&c.$$

$$B^{(0)} = 1 + \left(\frac{1}{2}\right)^2 \cdot f^2 + \left(\frac{1 \cdot 3}{2 \cdot 4}\right)^2 \cdot f^4 + \left(\frac{1 \cdot 3 \cdot 5}{2 \cdot 4 \cdot 6}\right)^2 \cdot f^6 + \&c.$$

and thus we get the following value of the excess of the asymptote above the hyperbolic curve, when both are infinitely extended, viz.

$$\frac{\pi}{2} \times \left\{ \frac{c + \sqrt{c^2 - 1}}{2} \cdot A^{(0)} - \frac{2(c^2 - 1)}{c + \sqrt{c^2 - 1}} \cdot B^{(0)} \right\};$$

and this expression is, in most cases, very commodious for computation, because, on account of the smallness of

$$f^2 = \left(\frac{c - \sqrt{c^2 - 1}}{c + \sqrt{c^2 - 1}} \right)^2, \text{ the series for } A^{(0)} \text{ and } B^{(0)} \text{ con-}$$

verge very rapidly.

HYPERBOLA, Acute, an hyperbola whose asymptotes make an acute angle.

HYPERBOLA, Ambigens, is that which has one of its infinite legs inscribed, and the other circumscribed. See **AMBIGENAL**.

HYPERBOLA, Equilateral or Rectangular, is that wherein

the conjugate axes are equal, and whose asymptotes make a right angle. Since the parameter is a third proportional to the conjugate axis, it is also equal to the axis: wherefore if in the equation $y^2 = bx + \frac{bxx}{a}$, expressing the nature

of the hyperbola, you suppose $b = a$; the equation $y^2 = ax + x^2$ will express the nature of the equilateral hyperbola. And hence the squares of the ordinates y^2 and x^2 are to each other as $ax + x^2$ and $av + v^2$: that is, as the rectangles of the abscissas into right lines composed of the abscissas and parameter. See **HYPERBOLA, supra**.

HYPERBOLAS, Infinite, or **HYPERBOLAS of the higher kind**, are those defined by the equation $ay^{m+n} = bx^n (d+x)^n$. Hence in the infinite hyperbolas $ay^{m+n} : av^{m+n} = bx^m (a+x)^n : bz^n (a+x)^n$; that is $y^{m+n} : v^{m+n} :: x^m (a+x)^n : z^n (a+x)^n$. See **HYPERBOLOID**.

As the hyperbola of the first kind, or order, has two asymptotes; that of the second kind, or order, has three; that of the third four, &c.

In respect of these, the hyperbola of the first kind is called the *Apollonian* or *conical* hyperbola: it is thus called in contradistinction to the hyperbolas of the higher kinds. It is called hyperbola from *ὑπερβαλλων*, to exceed, because in this

curve the square of the ordinate or y^2 is equal to $bx + \frac{b}{a}x^2$, and therefore exceeds the product of the parameter b , by the abscissa x .

HYPERBOLA, Inscribed. See **INSCRIBED**.

HYPERBOLA, for the locus of an, see **LOCUS**.

HYPERBOLA, for the quadrature of an, see **QUADRATURE** and **HYPERBOLA, supra**.

HYPERBOLAS, Conjugated, a name given to four hyperbolas, when the first and second axes of two opposite hyperbolas are the second and first axes of two other opposite hyperbolas. See **HYPERBOLA, supra**.

Hyperbolas of all degrees may be expressed by the equation $x^m y^n = a^{m+n}$ where a is a given quantity, x an abscissa taken on the asymptote, and y an ordinate to the asymptote.

HYPERBOLÆON. The hyperbolæon tetrachord was the most acute of the five tetrachords in the Greek system. This word is the genitive case of the plural substantive *ὑπερβολαι*, *summits, extremes*; the most acute sounds being at the summit of the rest.

HYPERBOLE, *ὑπερβολη*, *superlatio*, formed of the verb *ὑπερβαλλων*, to exceed, in *Rhetoric*, a figure, whereby the truth and reality of things are either excessively enlarged or diminished. See **EXAGGERATION**.

The character of an hyperbole is to exaggerate or extenuate the idea of the thing spoken of, beyond the bounds of truth, or even probability. As, he ran swifter than the wind; he went slower than a tortoise, &c.

Hyperboles, says Seneca, lie without deceiving; they lead the mind to truth by fictions; they convey the sentiment intended, though by expressing it in terms which render it incredible. The hyperbole promises too much, in order to make you conceive enough. There is nothing faulty in an hyperbole, when it is *ultra fidem*, as Quintilian says, provided that it be not *ultra modum*.

Aristotle observes, that hyperboles are the favourite figures of young authors, who love excess and exaggeration; but that philosophers should not use them without a great deal of reserve.

The pitch to which an hyperbole may be carried, is a point of great delicacy; to carry it too far is to destroy it: it is of the nature of a bow-string, which by immoderate tension,

tenfion,

tenfion, slackens; and frequently has an effect quite contrary to that intended. Longinus.

Those hyperboles are best, which are latent, and are not taken for hyperboles. For this reason, they should scarcely ever be used but in a passion; and in the middle of some important incident: such as the hyperbole of Herodotus speaking of the Lacedæmonians, who fought at Thermopylæ: "They defended themselves, for some time, with the arms that were left them, and at last with their hands and teeth; till the barbarians, continually shooting, buried them, as it were, with their arrows." Now what likelihood is there, that naked men should defend themselves with their hands and teeth against armed men; and that so many persons should be buried under their enemies' arrows? Yet does there appear some probability in the thing, by reason it is not fought for the sake of the figure; but the hyperbole seems to arise out of the subject itself. Id.

Of the like kind is that passage of a comic poet, mentioned by Longinus: "He had lands in the country no larger than a Lacedæmonian epistle."

There are certain manners of tempering the harshness of hyperboles, and giving them an air of probability. Virgil says, that to see the fleets of Antony and Augustus at the battle of Actium, one would have taken them for the Cyclopes floating on the water: and Florus, speaking of the expedition wherewith the Romans built a number of vessels in the first Punic war, says, 'It seemed not that the ships were built by workmen, but that the trees were transformed into ships by the gods.' They do not say, that the ships were floating islands; nor that the trees were metamorphosed into ships; but only that one might have taken them to be so. This precaution serves as a kind of passport to the hyperbole, if we may be allowed the phrase, and makes it go down even in prose; for what is excused before it is said, is always heard favourably, how incredible soever it be. Bouhours. The excess in this trope is called *auvefif*; as when we say of any thing that is very high, it reaches to the skies: the defect or contrary extreme is termed *meiofif*; as when we say of a very lean person, he is nothing but skin and bones, or a mere skeleton.

HYPERBOLIC, or HYPERBOLICAL, something relating either to an hyperbole, or an hyperbola.

HYPERBOLIC Conoid. See CONOID.

HYPERBOLIC Cylindroid, is a solid figure, whose generation is given by sir Christopher Wren, in the Philosophical Transactions.

Two opposite hyperboles being joined by the transverse axis, and through the centre, a right line being drawn at right angles to that axis; and above that, as an axis, the hyperboles being supposed to revolve; by such revolution, a body will be generated, which is called the hyperbolic cylindroid, whose bases, and all sections parallel to them, will be circles. In a subsequent transaction, the same author applies the new figure to the grinding of hyperbolic glasses; affirming, that they must be formed this way, or not at all. Phil. Transf. vol. iv. p. 961.

HYPERBOLIC Leg of a curve, is that which has an asymptote, or tangent at an infinite distance.

Sir Isaac Newton reduces all curves, both of the first and of the higher kinds, into those with hyperbolic legs, and those with parabolic ones; that is, such as have asymptotes, and such as have not, or such as have tangents at an infinite distance, and such as have not. See CURVE.

HYPERBOLIC Line is used by some authors for what we call the hyperbola itself.

In this sense the plane surface, terminated by the curve

line, is called the hyperbola; and the curve line that terminates it, the hyperbolic line.

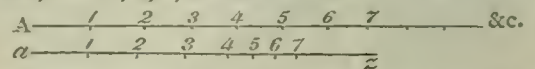
HYPERBOLIC Logarithms, or Napierian Logarithms, are a series of numbers, particularly useful in the determination and computation of fluents, arising from various problems in the higher branches of the mathematics; at the same time they have the property of common logarithms in facilitating many arithmetical operations, such as multiplication, division, extraction of roots, &c. &c.

These numbers are called hyperbolic logarithms, because they express the areas or spaces contained between the asymptote and curve of the hyperbola; those areas being limited by ordinates parallel to the other asymptote; the ordinates themselves decreasing in a geometrical progression. But this does not appear to be a proper method of denominating them, as such areas may be made to denote any system of logarithms whatever; for which reason they are now generally termed Napierian logarithms; from the name of their illustrious inventor, John Napier, baron of Merchiston, in Scotland. (See LOGARITHMS.) As we shall, under the article LOGARITHMS, enter at some length on the history of the invention, and the successive improvements of these very useful numbers; it will only be necessary, under the present article, to attend to the particular system which is the subject of our immediate consideration; by shewing, 1st, how it happened, that Napier fell upon this system, exclusively of all others; 2dly, in what respect it is inferior to that of the common logarithms, for arithmetical and trigonometrical operations; 3dly, that these numbers necessarily arise in the determination and computation of fluents; 4thly, we shall shew their application to the problems before mentioned; and lastly, present the reader with the most extensive table of hyperbolic logarithms that has yet been published; being for every number from 1 to 10,000, and each true to the eighth place of decimals.

Napier, in the construction of his logarithms, did not adapt them to the series of natural numbers 1, 2, 3, 4, 5, 6, &c. as it was not his intention to extend them to arithmetical operations in general; but he confined his labours to that circumstance which first suggested to him the necessity of the invention; and therefore he adapted his logarithms to the approximate numbers, which express the natural lines of every minute in the quadrant.

The same restricted idea was pursued through his method of constructing the logarithms. As the lines of the sines, of all arcs, are parts of the radius, or sine of the quadrant; he conceived the line of the radius to be described or run over by a point moving along it, in such a manner, that in equal portions of time it generated or cut off parts in a decreasing geometrical progression; leaving the several remainders, or lines, in geometrical progression also; while another point in an indefinite line, described equal parts of it in the same equal portions of time; so that the respective sums of these, or the whole lines generated, were always the arithmeticals or logarithms of these sines.

Thus $a z$ is the given radius on which all the lines are to be taken, and $A, 1, 2,$ &c. the indefinite



line containing the logarithms; these lines being both generated by the motion of points, beginning at A and a . Now at the end of the 1st, 2d, 3d, &c. moments or equal portions of time, the moving points being found at the places marked 1, 2, 3, &c. then will $z a, z 1, z 2, z 3,$ &c. be the series of natural sines; and $A o,$ or $(o), A 1, A 2, A 3,$ &c. will be their logarithms, supposing the point which generates

HYPERBOLIC LOGARITHMS.

nerates $a z$ to move every where, with a velocity decreasing in proportion to its distance from z ; viz. its velocity in the points $o, 1, 2, 3, \&c.$ to be respectively as the distances $z o, z 1, z 2, z 3, \&c.$; while the velocity of the point generating the logarithmic line remains always the same as in the first point A , or o . Hutton's Introduction to Logarithms.

In this state the system of logarithms was undetermined, having only supposed one condition or limitation; namely, that the logarithm of $a z$, or radius, should be o , or radius itself equal to unity, which was assumed, in order to render the trigonometrical operations the more easy; but another condition was still necessary to limit the scale or system; and as the one which we have described was contrived in order to simplify the operations; so the second was assumed, in order to render the calculation of the tables as easy as possible; for which reason he supposed, that the two generating points should begin to move from A and a with equal velocities, or that the increments, as $A 1$, described in the first moments, should be equal; and this supposition gave at once to every number its particular logarithm, and thus he found that his logarithm of the ratio of 10 to 1 became 2.30258509, and hence it happened, that by means of these two accidental and arbitrary assumptions, Napier's system of logarithms was of that kind which we designate by hyperbolic logarithms.

It would, however, be uninteresting to the reader to follow Napier any further in his construction, as methods much more simple have been since discovered for the formation of logarithmic tables; and which shew far more distinctly the nature of those numbers; in order to the explanation of which, it will be proper to begin by defining logarithms in general: thus,

The logarithm of a number is the exponent of that power of some other number, which is equal to the first: hence, if $r^x = a$, then will x represent the logarithm of a ; and r will be the radix of the system, which it is obvious may be assumed at pleasure. If we take $r = 10$, it will be the common logarithmic system; and if r be taken = 2.7182818, it gives the hyperbolic logarithmic scale; and the reason for assigning to r the above value will be evident from the following investigation. Since $r^x = a$, we must, in order to find the logarithm of a , obtain an expression for x , in the above equation in terms of r and a ; which may be effected thus:

Let $a = 1 + p$, and $\frac{1}{x} = z$; then from $r^x = a$, we deduce

$$r = (1 + p)^z = 1 + \left(p - \frac{p^2}{2} + \frac{p^3}{3} - \frac{p^4}{4} + \&c. \right) z + \frac{1}{2} \left(p - \frac{p^2}{2} + \frac{p^3}{3} - \frac{p^4}{4} + \&c. \right)^2 z^2 + \frac{1}{2 \cdot 3} \left(p - \frac{p^2}{2} + \frac{p^3}{3} - \frac{p^4}{4} + \&c. \right)^3 z^3 + \frac{1}{2 \cdot 3 \cdot 4} \left(p - \frac{p^2}{2} + \frac{p^3}{3} - \frac{p^4}{4} + \&c. \right)^4 z^4 + \&c.;$$

and by making $p - \frac{p^2}{2} + \frac{p^3}{3} - \frac{p^4}{4} + \&c. = s$; we shall have

$$1 + sz + \frac{1}{2} s^2 z^2 + \frac{1}{2 \cdot 3} s^3 z^3 + \frac{1}{2 \cdot 3 \cdot 4} s^4 z^4 + \frac{1}{2 \cdot 3 \cdot 4 \cdot 5} s^5 z^5 + \&c. = r; \text{ or } sz + \frac{1}{2} s^2 z^2 + \frac{1}{2 \cdot 3} s^3 z^3 + \frac{1}{2 \cdot 3 \cdot 4} s^4 z^4 + \frac{1}{2 \cdot 3 \cdot 4 \cdot 5} s^5 z^5 + \&c. = r - 1; \text{ which let be}$$

put equal to q ; then by reverting the series, z or $\frac{1}{x}$ will be

$$\text{found} = \frac{q - \frac{1}{2} q^2 + \frac{1}{3} q^3 - \frac{1}{4} q^4 + \frac{1}{5} q^5 - \&c.}{s}$$

$$\frac{q - \frac{1}{2} q^2 + \frac{1}{3} q^3 - \frac{1}{4} q^4 + \frac{1}{5} q^5 - \&c.}{p - \frac{1}{2} p^2 + \frac{1}{3} p^3 - \frac{1}{4} p^4 + \frac{1}{5} p^5 - \&c.}; \text{ and, consequently,}$$

$$x = \frac{p - \frac{1}{2} p^2 + \frac{1}{3} p^3 - \frac{1}{4} p^4 + \frac{1}{5} p^5 - \&c.}{q - \frac{1}{2} q^2 + \frac{1}{3} q^3 - \frac{1}{4} q^4 + \frac{1}{5} q^5 - \&c.} \text{ or, substituting}$$

for p and q their respective values; that is, $p = a - 1$, and $q = r - 1$, we have the following general expression for the logarithm of a ; viz. $\log. a$

$$= \frac{(a-1) - \frac{1}{2}(a-1)^2 + \frac{1}{3}(a-1)^3 - \frac{1}{4}(a-1)^4 + \frac{1}{5}(a-1)^5 - \&c.}{(r-1) - \frac{1}{2}(r-1)^2 + \frac{1}{3}(r-1)^3 - \frac{1}{4}(r-1)^4 + \frac{1}{5}(r-1)^5 - \&c.}$$

which is a general expression, in terms of a and the radix r , which last may, therefore, be assumed any number at pleasure, greater or less than unity. Now as r , in every system, is a constant quantity, being always the number whose logarithm, in the system to which it belongs, is 1; the above expression may be simplified, either by assuming r equal to some particular number, and from thence finding the value of the series constituting the denominator; or, by assuming the whole series equal to some particular number, and from thence finding the value that must be given to the radix r .

By the latter of these methods the denominator may be made to vanish, by assuming the value of the series of which it consists equal to 1; in which case the logarithm of a becomes, $\log. a = (a - 1) - \frac{1}{2}(a - 1)^2 + \frac{1}{3}(a - 1)^3 - \frac{1}{4}(a - 1)^4 + \frac{1}{5}(a - 1)^5 - \&c.$; or, making again $a = 1 + p$; we have $\log. (1 + p) = p - \frac{1}{2} p^2 + \frac{1}{3} p^3 - \frac{1}{4} p^4 + \frac{1}{5} p^5 - \&c.$ and by means of the expression, $(r - 1) - \frac{1}{2}(r - 1)^2 + \frac{1}{3}(r - 1)^3 - \frac{1}{4}(r - 1)^4 + \&c. = 1$, we find $r = 2.7182818, \&c.$ which is the number we before stated to be the radix of the hyperbolic system.

The above is evidently the simplest form that the logarithmic series admits of; and, therefore, such as would be naturally adopted by any person, before he was aware of the advantages or disadvantages of it in other respects; when compared with a different system; and thus it was Napier first employed these numbers, although he did not know of the above method of arriving at them. But as soon as Briggs had considered the nature of their generation, and the purposes they were intended to answer, he soon convinced himself, and Napier likewise, that much advantage would arise in their application, by taking for the radix of the system of logarithms the same number, as was the radix of the scale of notation; that is, by assuming $r = 10$; by which means, the logarithm of the same digits in the same order was always constant, whether these were integral, decimal, or compounded of both; and only the index or characteristic was to be changed; and various other advantages that this method possesses over the other, will be explained under the article LOGARITHMS: we shall, therefore, only observe here, that the advantages of Briggs's system are so decisive, that Napier's would, before this time, have been forgotten, had not the invention of fluxions again called into action the dormant powers of hyperbolic logarithms.

We have already seen that the hyperbolic logarithm of $1 + p$, or of $1 + x$, by writing x instead of p , is hyp. $\log. (1 + x) = x - \frac{1}{2} x^2 + \frac{1}{3} x^3 - \frac{1}{4} x^4 + \frac{1}{5} x^5 - \&c.$

Now let it be required to find the fluent of the fluxion $\frac{\dot{x}}{1+x}$; this in a series becomes $\dot{x} \left(\frac{1}{1+x} \right) = \dot{x} (1 - x + x^2 - x^3 + x^4 - x^5 \&c.) = \dot{x} - x\dot{x} + x^2\dot{x} - x^3\dot{x} + x^4\dot{x} - \&c.$; or, taking the fluents by the common rule, we have the

HYPERBOLIC LOGARITHMS.

fluent of $\frac{\dot{x}}{1-x} = x - \frac{1}{2}x^2 + \frac{1}{3}x^3 - \frac{1}{4}x^4 + \frac{1}{5}x^5 - \&c.$

but this last series is the same as that expressing the hyp. log^s of $(1+x)$, therefore the fluent of $\frac{\dot{x}}{1+x}$ is the hyp. log^s of

$1+x$. And the same rule is general for every quantity, of which the numerator is the fluxion, or any multiple of the fluxion of the denominator; these being all reducible to the same form. (See FLUXIONS and FLUENTS.) Thus we have

the fluent of $\frac{\dot{x}}{x \pm a} = \text{hyp. log. of } (x \pm a)$

the fluent of $\frac{2x\dot{x}}{a^2+x^2} = \text{hyp. log. of } (a^2+x^2)$

the fluent of $\frac{nx^{n-1}\dot{x}}{a^n+x^n} = \text{hyp. log. of } (a^n+x^n)$

the fluent of $\frac{\dot{x}}{\sqrt{x^2 \pm 2a^2}} = \text{hyp. log. of } (x + \sqrt{x^2 \pm 2a^2})$

the fluent of $\frac{\dot{x}}{\sqrt{x^2 \pm 2ax}} = \text{hyp. log. of } (x \pm a + \sqrt{x^2 \pm 2ax})$

the fluent of $\frac{2a\dot{x}}{a^2-x^2} = \text{hyp. log. of } \left(\frac{a+x}{a-x}\right)$

the fluent of $\frac{2a\dot{x}}{x\sqrt{a^2+x^2}} = \text{hyp. log. of } \left(\frac{\sqrt{a^2+x^2}-a}{\sqrt{a^2+x^2}+a}\right)$

the fluent of $\frac{x^2\dot{x}}{\sqrt{b^2+x^2}} = -\text{hyp. log. of } \left(\frac{1+\sqrt{1+b^2x^2}}{x}\right)$

These are only a few of the cases in which hyperbolic logarithms are applied to the computation of fluents; and for the application of which to practice, the following table will be found very useful: it will need little or no explanation, being the same in form as the common tables of logarithms; and all that is necessary to be observed is, that as the index of the logarithm is not repeated in every column, a small dash (—) is placed over the first figure of the decimal, when any change takes place in the index. Thus, for example, the hyp. log. of 1097 is 7.00033446, the small dash indicating, that the index in that place changes from 6 to 7. If the hyperbolic logarithm of a fraction be required, we have only to subtract the log. of the denominator from that of the numerator for the log. sought: thus, the hyp. log. of

$\frac{119}{1172} = 4.77912349 - 7.06646697 = -2.28734348$; the whole of which expression is negative, whereas in the common system, the decimal part always retains a positive value, and the index only becomes negative; and this is again one of the inconveniences attending the hyperbolic system. When the natural number corresponding to any given hyp. log. is required, whether the given log. be positive or nega-

tive, it is always best to add to the given log. the log. of such a power of 10 as will bring it as near the end of the tables as possible, and then having found the natural number the same as in the common tables; divide the result by the same power of 10 for the natural number sought: the reason for which is, that the differences are too variable in the beginning of the table to be of any assistance in deducing the proportional parts. Suppose, for example, the given hyperbolic logarithm was -3.28734348 , and it was required to find the corresponding natural number. Now the hyp. log. of 10 = 2.30258509, multiply this by 5, we have $10^5 = 11.51292545$, which being added to the given log. we have $-3.28734348 + 11.51292545 = 8.22558197$. Again,

| | |
|----------------------------------|------------|
| Nat. number to 8.22550309 = 3735 | 8.22558197 |
| 8.22587090 = 3736 | 8.22550309 |

Difference 36781 : 1 :: 7888 : .2

hence $\frac{3735.2}{100000} = .037352$ is the natural number required.

And in this manner may the natural number answering to any given hyp. log. not in the table, be reduced to another within the limits of the table, by adding or subtracting from it such powers of 10 as are sufficient for that purpose; observing always to repeat the reverse operation after the number is obtained. And by a similar method, the hyp. log. of any number not found in the table may be reduced to another, that is, by either multiplying or dividing it by such powers of 10 as may be necessary for that purpose; only remembering to subtract or add to the logarithm thus found the logarithm of the same power of 10, as that by which the given number was multiplied or divided. This will be more evident from the following examples:

Exam. 1.—Find the hyperbolic logarithm of .7854.

First, $.7854 = \frac{7854}{10000}$; and, therefore, the hyp. log. of .7854 = hyp. log. 7854 — hyp. log. 10⁴ = 8.96877824 — 4 × 2.30258509 = — 0.24156212, the logarithm sought.

Exam. 2.—Find the hyperbolic logarithm of 78.54.

Here $78.54 = \frac{7854}{100}$; and, therefore, the hyp. log. of 78.54 = hyp. log. of 7854 — hyp. log. 10² = 8.96877824 — 2 × 2.30258509 = 4.36360806, the log. required.

The following table of hyperbolic logarithms has been computed by Mr. Peter Barlow, of the Royal Military Academy, Woolwich; and it is presumed that it will be considered as an acquisition to mathematicians: it forms only a small portion of an extensive set of mathematical tables calculated by the same gentleman; most of which are entirely new, but the slow demand that such works experience will, it is feared, prevent the appearance of this useful performance.

HYPERBOLIC LOGARITHMS.

TABLE of Hyperbolic Logarithms of all Numbers, from 1 to 10,000

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| 0 | inf. neg. | 0.00000000 | 0.69314718 | 1.09861229 | 1.58629436 | 1.60943791 | 1.79175947 | 1.94591015 | 2.07544154 | 2.19722458 |
| 1 | 2.30258509 | 39789527 | 48490665 | 56494936 | 63905733 | 70805020 | 77258872 | 83321334 | 89037176 | 94443898 |
| 2 | 99573227 | 04452244 | 09104245 | 13549422 | 17805383 | 21887582 | 25809654 | 29583687 | 33220451 | 36729583 |
| 3 | 340119738 | 43398720 | 46573599 | 49650756 | 52636052 | 55534806 | 58351894 | 61091791 | 63758616 | 66356165 |
| 4 | 68887945 | 71357207 | 73766962 | 76120012 | 78418963 | 80666249 | 82864140 | 85014760 | 87120101 | 89182030 |
| 5 | 91202301 | 93182563 | 95124372 | 97029191 | 98898405 | 00733319 | 02535169 | 04335127 | 06044301 | 07753744 |
| 6 | 09434456 | 11087386 | 12713439 | 14313473 | 15888308 | 17438727 | 18965474 | 20469262 | 21950771 | 23410650 |
| 7 | 24449524 | 26267988 | 27666612 | 29045944 | 30406509 | 31748811 | 33073334 | 34380542 | 35670883 | 36944785 |
| 8 | 38202663 | 39444915 | 40671925 | 41884061 | 43081680 | 44265126 | 45434730 | 46590812 | 47733681 | 48863637 |
| 9 | 49980997 | 51085951 | 52178858 | 53259949 | 54329478 | 55387689 | 56434819 | 57471098 | 58496748 | 59511985 |
| 10 | 60517019 | 61512052 | 62497281 | 63472899 | 64439090 | 65396035 | 66343909 | 67282883 | 68213123 | 69134788 |
| 11 | 70048037 | 70953020 | 71849887 | 72738782 | 73619845 | 74493213 | 75359019 | 76217393 | 77068462 | 77912349 |
| 12 | 78749174 | 79579055 | 80402104 | 81218436 | 82028157 | 82831374 | 83628191 | 84418709 | 85203026 | 85981240 |
| 13 | 86753445 | 87519732 | 88280192 | 89034913 | 89783980 | 90527478 | 91265489 | 91998093 | 92725369 | 93447393 |
| 14 | 94164242 | 94875989 | 95582706 | 96284463 | 96981330 | 97673374 | 98360662 | 99043259 | 99721227 | 00394631 |
| 15 | 01063529 | 01727984 | 02388052 | 03043792 | 03695260 | 04342512 | 04985601 | 05624581 | 06259503 | 06890420 |
| 16 | 07517382 | 08140436 | 08759634 | 09375020 | 09986643 | 10594547 | 11198779 | 11799381 | 12396398 | 12989871 |
| 17 | 13579844 | 14166356 | 14749448 | 15329159 | 15905530 | 16478597 | 17048400 | 17614931 | 18178355 | 18738581 |
| 18 | 19295685 | 19849703 | 20400669 | 20948615 | 21493576 | 22035583 | 22574667 | 23110862 | 23644196 | 24174702 |
| 19 | 24702407 | 25227343 | 25749537 | 26269019 | 26785816 | 27299956 | 27811466 | 28320373 | 28826703 | 29330482 |
| 20 | 29837137 | 30330491 | 30826770 | 31320598 | 31811999 | 32300998 | 32787617 | 33271879 | 33753808 | 34233425 |
| 21 | 34710753 | 35185813 | 35658627 | 36129217 | 36597602 | 37063803 | 37527841 | 37989735 | 38449503 | 38907173 |
| 22 | 39362755 | 39816270 | 40267738 | 40717177 | 41164605 | 41610040 | 42053500 | 42495002 | 42934563 | 43372200 |
| 23 | 43807931 | 44241771 | 44673737 | 45103845 | 45532112 | 45958551 | 46383181 | 46806014 | 47227067 | 47646355 |
| 24 | 48063892 | 48479693 | 48893773 | 49306144 | 49716823 | 50125821 | 50533154 | 50938834 | 51342875 | 51745290 |
| 25 | 52146092 | 52545294 | 52942909 | 53338949 | 53733427 | 54126355 | 54517744 | 54907608 | 55295958 | 55682806 |
| 26 | 56068163 | 56432041 | 56834450 | 57215403 | 57594910 | 57972983 | 58349631 | 58724866 | 59098698 | 59471138 |
| 27 | 59842196 | 60211882 | 60580207 | 60947180 | 61312811 | 61677110 | 62040087 | 62401751 | 62762111 | 63121178 |
| 28 | 63478960 | 63835467 | 64190707 | 64544690 | 64897424 | 65248918 | 65599181 | 65948222 | 66296048 | 66642669 |
| 29 | 66988092 | 67332327 | 67675380 | 68017261 | 68357977 | 68697536 | 69035945 | 69373214 | 69709349 | 70044357 |
| 30 | 70378247 | 70711026 | 71042702 | 71373281 | 71702770 | 72031178 | 72358510 | 72684775 | 73009978 | 73334128 |
| 31 | 73657230 | 73979291 | 74300319 | 74620319 | 74939299 | 75257264 | 75574221 | 75890177 | 76205138 | 76519110 |
| 32 | 76832100 | 77144112 | 77455155 | 77765232 | 78074352 | 78382518 | 78689738 | 78996017 | 79301361 | 79605775 |
| 33 | 79909265 | 80211838 | 80513497 | 80814249 | 81114099 | 81413053 | 81711116 | 82008293 | 82304590 | 82600011 |
| 34 | 82894562 | 83183248 | 83481074 | 83773045 | 84064166 | 84354442 | 84643878 | 84932478 | 85220248 | 85507192 |
| 35 | 85793315 | 86078622 | 86363118 | 86646806 | 86929691 | 87211779 | 87493073 | 87773578 | 88053299 | 88332239 |
| 36 | 88610403 | 88887796 | 89164421 | 89440283 | 89715387 | 89989735 | 90263333 | 90536185 | 90808294 | 91079664 |
| 37 | 91350301 | 91620206 | 91889385 | 92157842 | 92425580 | 92692603 | 92958914 | 93224519 | 93489420 | 93753621 |
| 38 | 94017125 | 94279938 | 94542061 | 94803499 | 95064255 | 95324333 | 95583737 | 95842469 | 96100534 | 96357934 |
| 39 | 96614674 | 96870756 | 97126184 | 97380961 | 97635091 | 97888576 | 98141421 | 98393628 | 98645201 | 98896142 |
| 40 | 99146455 | 99396143 | 99645209 | 99893656 | 00141488 | 00388707 | 00635316 | 00881319 | 01126717 | 01371516 |
| 41 | 01615716 | 01859321 | 02102335 | 02344759 | 02586597 | 02827852 | 03068526 | 03308622 | 03548143 | 03787092 |
| 42 | 04025471 | 04263283 | 04500531 | 04737218 | 04973346 | 05208917 | 05444395 | 05678401 | 05912320 | 06145692 |
| 43 | 06378521 | 06610809 | 06842559 | 07073773 | 07304453 | 07534603 | 07764224 | 07993320 | 08221891 | 08449941 |
| 44 | 08677473 | 08904488 | 09130988 | 09356977 | 09582456 | 09807428 | 10031895 | 10255859 | 10479323 | 10702289 |
| 45 | 10924758 | 11146734 | 11368218 | 11589213 | 11809720 | 12029742 | 12249281 | 12468339 | 12686918 | 12905021 |
| 46 | 13122649 | 13339804 | 13556489 | 13772705 | 13988455 | 14203741 | 14418563 | 14632926 | 14846830 | 15060277 |
| 47 | 15273269 | 15485809 | 15697899 | 15909539 | 16120732 | 16331480 | 16541785 | 16751649 | 16961073 | 17170060 |
| 48 | 17378610 | 17586727 | 17794411 | 18001665 | 18208491 | 18414889 | 18620862 | 18826412 | 19031541 | 19236249 |
| 49 | 19440539 | 19644413 | 19847872 | 20050917 | 20253552 | 20455776 | 20657593 | 20859003 | 21060008 | 21260610 |

HYPERBOLIC LOGARITHMS.

TABLE of Hyperbolic Logarithms.

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----|------------|-----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 50 | 6.21460810 | 21660610 | 21860012 | 22059017 | 22257627 | 22455843 | 22653667 | 22851100 | 23048145 | 23244802 |
| 51 | 23441073 | 23636959 | 23832463 | 24027585 | 24222327 | 24416690 | 24610677 | 24804287 | 24997524 | 25190388 |
| 52 | 25382881 | 25575004 | 25766759 | 25958146 | 26149168 | 26339826 | 26530121 | 26720055 | 26909628 | 27098843 |
| 53 | 27287701 | 27476202 | 27664349 | 27852142 | 28039584 | 28226675 | 28413416 | 28599809 | 28785856 | 28971557 |
| 54 | 29156914 | 29341928 | 29526600 | 29710932 | 29894925 | 30078579 | 30261893 | 30444880 | 30627529 | 30809844 |
| 55 | 30991828 | 31173481 | 31354805 | 31535800 | 31716469 | 31896811 | 32076829 | 32256524 | 32435896 | 32614947 |
| 56 | 32793678 | 32972091 | 33150185 | 33327963 | 33505425 | 33682573 | 33859408 | 34035930 | 34212142 | 34388043 |
| 57 | 34563636 | 34738921 | 34913899 | 35088572 | 35262940 | 35437004 | 35610766 | 35784227 | 35957387 | 36130248 |
| 58 | 36302810 | 36475076 | 36647045 | 36818719 | 36990098 | 37161185 | 37331979 | 37502482 | 37672695 | 37842618 |
| 59 | 38012254 | 38181602 | 38350663 | 38519440 | 38687932 | 38856141 | 39024067 | 39191711 | 39359075 | 39526160 |
| 60 | 39692966 | 39859473 | 40025745 | 40191720 | 40357420 | 40522846 | 40687999 | 40852879 | 41017488 | 41181827 |
| 61 | 41345896 | 41509796 | 41673228 | 41836494 | 41999493 | 42162227 | 42324696 | 42486902 | 42648846 | 42810527 |
| 62 | 42971948 | 43133188 | 43294009 | 43454652 | 43615037 | 43775165 | 43935037 | 44094654 | 44254017 | 44413126 |
| 63 | 44571942 | 4473-5006 | 44889339 | 45047042 | 45204895 | 45362500 | 45519856 | 45676966 | 45833828 | 45990445 |
| 64 | 46146818 | 46302946 | 46458930 | 46614472 | 46769873 | 46925032 | 47079950 | 47234629 | 47389070 | 47543272 |
| 65 | 47697236 | 47850964 | 48004456 | 48157713 | 48310735 | 48463524 | 48616079 | 48768402 | 48920493 | 49072353 |
| 66 | 49223984 | 49375384 | 49526556 | 49677499 | 49828215 | 49978704 | 50128967 | 50279005 | 50428817 | 50578406 |
| 67 | 50727771 | 50876914 | 51025834 | 51174533 | 51323011 | 51471269 | 51619308 | 51767127 | 51914729 | 52062113 |
| 68 | 52209280 | 52356231 | 52502966 | 52649486 | 52795792 | 52941884 | 53087763 | 53233429 | 53378884 | 53524127 |
| 69 | 53669160 | 53813982 | 53958596 | 54103000 | 54247196 | 54391185 | 54534966 | 54678541 | 54821910 | 54965074 |
| 70 | 55108034 | 55250789 | 55393340 | 55535689 | 55677836 | 55819780 | 55961524 | 56103067 | 56244409 | 56385553 |
| 71 | 56526497 | 56667243 | 56807791 | 56948142 | 57088296 | 57228254 | 57368017 | 57507584 | 57646957 | 57786136 |
| 72 | 57925121 | 58063914 | 58202514 | 58340922 | 58479139 | 58617165 | 58755001 | 58892648 | 59030105 | 59167373 |
| 73 | 59304453 | 59441346 | 59578051 | 59714570 | 59850903 | 59987050 | 60123012 | 60258789 | 60394382 | 60529792 |
| 74 | 60665019 | 60800063 | 60934924 | 61069604 | 61204103 | 61338422 | 61472560 | 61606519 | 61740298 | 61873898 |
| 75 | 62007321 | 62140565 | 62273632 | 62406523 | 62539237 | 62671775 | 62804138 | 62936325 | 63068339 | 63200178 |
| 76 | 63331843 | 63463336 | 63594656 | 63725803 | 63856779 | 63987583 | 64118217 | 64248680 | 64378973 | 64509097 |
| 77 | 64639051 | 64768837 | 64898455 | 65027905 | 65157187 | 65286303 | 65415252 | 65544035 | 65672652 | 65801105 |
| 78 | 65929392 | 66057515 | 66185474 | 66313270 | 66440902 | 66568372 | 66695679 | 66822825 | 66949809 | 67076632 |
| 79 | 67203295 | 67329797 | 67456139 | 67582322 | 67708346 | 67834211 | 67959919 | 68085468 | 68210860 | 68336095 |
| 80 | 68461173 | 68586095 | 68710861 | 68835471 | 68959927 | 69084228 | 69208374 | 69332367 | 69456206 | 69579892 |
| 81 | 69703425 | 69826805 | 69950034 | 70073111 | 70196037 | 70318811 | 70441435 | 70563909 | 70686234 | 70808408 |
| 82 | 70930434 | 71052311 | 71174040 | 71295620 | 71417053 | 71538339 | 71659477 | 71780470 | 71901315 | 72022016 |
| 83 | 72142577 | 72262979 | 72383244 | 72503364 | 72623340 | 72743172 | 72862861 | 72982407 | 73101810 | 73221071 |
| 84 | 73340139 | 73459166 | 73578001 | 73696696 | 73815249 | 73933663 | 74051936 | 74170069 | 74288064 | 74405919 |
| 85 | 74523635 | 74641213 | 74758653 | 74875955 | 74993119 | 75110147 | 75227038 | 75343792 | 75460410 | 75576892 |
| 86 | 75693239 | 75809450 | 75925327 | 76041469 | 76157277 | 76272951 | 76388491 | 76503898 | 76619171 | 76734313 |
| 87 | 76849321 | 76964198 | 77078942 | 77193556 | 77308038 | 77422389 | 77536609 | 77650699 | 77764659 | 77878490 |
| 88 | 77992191 | 78105763 | 78219206 | 78332520 | 78445706 | 78558765 | 78671695 | 78784498 | 78897174 | 79009724 |
| 89 | 79122146 | 79234443 | 79346613 | 79458658 | 79570578 | 79682372 | 79794041 | 79905586 | 80017007 | 80128303 |
| 90 | 80239476 | 80350526 | 80461452 | 80572255 | 80682936 | 80793494 | 80903931 | 81014245 | 81124438 | 81234509 |
| 91 | 81344460 | 81454290 | 81563999 | 81673588 | 81782057 | 81890407 | 82000636 | 82110747 | 82220739 | 82330612 |
| 92 | 82437367 | 82546004 | 82654522 | 82762923 | 82871207 | 82979374 | 83087423 | 83195357 | 83303173 | 83410874 |
| 93 | 83518459 | 83625928 | 83733281 | 83840520 | 83947644 | 84054653 | 84161548 | 84268328 | 84374995 | 84481548 |
| 94 | 84587988 | 84694314 | 84800527 | 84906628 | 85012617 | 85118493 | 85224257 | 85329909 | 85435450 | 85540880 |
| 95 | 85646198 | 85751406 | 85856503 | 85961490 | 86066367 | 86171134 | 86275791 | 86380339 | 86484778 | 86589107 |
| 96 | 86693328 | 86797441 | 86901445 | 87005341 | 87109129 | 87212810 | 87316383 | 87419850 | 87523209 | 87626461 |
| 97 | 87729607 | 87832647 | 87935580 | 88038408 | 88141130 | 88243747 | 88346259 | 88448665 | 88550967 | 88653164 |
| 98 | 88755257 | 88857246 | 88959131 | 89060912 | 89162590 | 89264164 | 89365635 | 89467004 | 89568270 | 89669433 |
| 99 | 89770494 | 89871453 | 89972311 | 90073066 | 90173721 | 90274274 | 90374726 | 90475077 | 90575328 | 90675478 |

HYPERBOLIC LOGARITHMS.

TABLE of Hyperbolic Logarithms.

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| 100 | 6.90775528 | 90875478 | 90975328 | 91075079 | 91174730 | 91274282 | 91373735 | 91473089 | 91572345 | 91671502 |
| 101 | 91770561 | 91869522 | 91968585 | 92067750 | 92165818 | 92264389 | 92362863 | 92461240 | 92559520 | 92657703 |
| 102 | 92755590 | 92853582 | 92951677 | 93049477 | 93147181 | 93244789 | 93342303 | 93439721 | 93537045 | 93634274 |
| 103 | 93731408 | 93828448 | 93925395 | 94022247 | 94119006 | 94215671 | 94312242 | 94408721 | 94505106 | 94601399 |
| 104 | 94697599 | 94793707 | 94889722 | 94985646 | 95081477 | 95177216 | 95272864 | 95368421 | 95463886 | 95559261 |
| 105 | 95654544 | 95749737 | 95844839 | 95939851 | 96034773 | 96129605 | 96224346 | 96318999 | 96413561 | 96508035 |
| 106 | 96602419 | 96696714 | 96790920 | 96885038 | 96979067 | 97073008 | 97166860 | 97260625 | 97354302 | 97447891 |
| 107 | 97541393 | 97634807 | 97728134 | 97821374 | 97914528 | 98007594 | 98100574 | 98193468 | 98286275 | 98378997 |
| 108 | 98471632 | 98564182 | 98656646 | 98749025 | 98841318 | 98933527 | 99025650 | 99117689 | 99209643 | 99301512 |
| 109 | 99393298 | 99484999 | 99576616 | 99668149 | 99759598 | 99850964 | 99942247 | 10003346 | 100124562 | 100215595 |
| 110 | 7.00306546 | 00397414 | 00488199 | 00578902 | 00669523 | 00760061 | 00850518 | 00940893 | 01031187 | 01121599 |
| 111 | 01211529 | 01301579 | 01391547 | 01481435 | 01571242 | 01660968 | 01750614 | 01840180 | 01929665 | 02019071 |
| 112 | 02108396 | 02197742 | 02286809 | 02375695 | 02464403 | 02553831 | 02642981 | 02731851 | 02820443 | 02908756 |
| 113 | 02997291 | 03085748 | 03174126 | 03262245 | 03350148 | 03437893 | 03525460 | 03612849 | 03700261 | 03787596 |
| 114 | 038748354 | 03962035 | 04049369 | 04141166 | 04228617 | 04315992 | 04403290 | 04490512 | 04577658 | 04664728 |
| 115 | 04751722 | 04838641 | 04925484 | 05012252 | 05098945 | 05185562 | 05272105 | 05358573 | 05444966 | 05531284 |
| 116 | 05617528 | 05703698 | 05789794 | 05875815 | 05961763 | 06047637 | 06133437 | 06219163 | 06304816 | 06390396 |
| 117 | 06475903 | 06561336 | 06646697 | 06731985 | 06817200 | 06902343 | 06987413 | 07072411 | 07157336 | 07242190 |
| 118 | 07326972 | 07411682 | 07496320 | 07580886 | 07665382 | 07749805 | 07834158 | 07918439 | 08002650 | 08086790 |
| 119 | 08170859 | 08254857 | 08338785 | 08422642 | 08506429 | 08590146 | 08673793 | 08757371 | 08840878 | 08924316 |
| 120 | 09007684 | 09090982 | 09174212 | 09257372 | 09340463 | 09423485 | 09506438 | 09589322 | 09672138 | 09754885 |
| 121 | 09837564 | 09920174 | 10002717 | 10085191 | 10167597 | 10249936 | 10332206 | 10414409 | 10496545 | 10578613 |
| 122 | 10660614 | 10742547 | 10824414 | 10906214 | 10987946 | 11069612 | 11151212 | 11232744 | 11314211 | 11395611 |
| 123 | 11476945 | 11558213 | 11639414 | 11720550 | 11801620 | 11882625 | 11963564 | 12044437 | 12125245 | 12205988 |
| 124 | 12286666 | 12367279 | 12447826 | 12528309 | 12608727 | 12689081 | 12769370 | 12849595 | 12929755 | 13009851 |
| 125 | 13089883 | 13169851 | 13249755 | 13329595 | 13409372 | 13489085 | 13568735 | 13648321 | 13727844 | 13807303 |
| 126 | 13886700 | 13966034 | 14045304 | 14124512 | 14203657 | 14282740 | 14361760 | 14440718 | 14519613 | 14598447 |
| 127 | 14677218 | 14755927 | 14834574 | 14913160 | 14991684 | 15070146 | 15148546 | 15226886 | 15305163 | 15383380 |
| 128 | 15461536 | 15539930 | 15618264 | 15696536 | 15774748 | 15852900 | 15930990 | 16009021 | 16087091 | 16165200 |
| 129 | 16239750 | 16317239 | 16394668 | 16472038 | 16549348 | 16626597 | 16703788 | 16780918 | 16857990 | 16935002 |
| 130 | 17011954 | 17088848 | 17165682 | 17242458 | 17319174 | 17395832 | 17472431 | 17548971 | 17625453 | 17701877 |
| 131 | 17778242 | 17854548 | 17930797 | 18006987 | 18083120 | 18159194 | 18235211 | 18311170 | 18387072 | 18462915 |
| 132 | 18538702 | 18614430 | 18690102 | 18765716 | 18841274 | 18916774 | 18992217 | 19067603 | 19142933 | 19218206 |
| 133 | 19293422 | 19368582 | 19443685 | 19518732 | 19593723 | 19668657 | 19743535 | 19818358 | 19893124 | 19967835 |
| 134 | 20042489 | 20117088 | 20191632 | 20266120 | 20340552 | 20414929 | 20489251 | 20563518 | 20637729 | 20711886 |
| 135 | 20785987 | 20860034 | 20934026 | 21007963 | 21081845 | 21155673 | 21229447 | 21303166 | 21376831 | 21450441 |
| 136 | 21523998 | 21597500 | 21670949 | 21744413 | 21817784 | 21891097 | 21964204 | 22037234 | 22110150 | 22183053 |
| 137 | 22256602 | 22329568 | 22402481 | 22475341 | 22548147 | 22620901 | 22693602 | 22766250 | 22838845 | 22911388 |
| 138 | 22983878 | 23056315 | 23128700 | 23201033 | 23273314 | 23345542 | 23417718 | 23489842 | 23561914 | 23633934 |
| 139 | 23705903 | 23777819 | 23849684 | 23921497 | 23993259 | 24064969 | 24136628 | 24208236 | 24279792 | 24351297 |
| 140 | 24422752 | 24494155 | 24565507 | 24636808 | 24708058 | 24779258 | 24850407 | 24921506 | 24992554 | 25063551 |
| 141 | 25134498 | 25205395 | 25276242 | 25347038 | 25417785 | 25488481 | 25559127 | 25629724 | 25700271 | 25770768 |
| 142 | 25841215 | 25911613 | 25981961 | 26052260 | 26122509 | 26192709 | 26262860 | 26332962 | 26403014 | 26473018 |
| 143 | 26542972 | 26612878 | 26682735 | 26752543 | 26822302 | 26892013 | 26961675 | 27031289 | 27100854 | 27170371 |
| 144 | 27239839 | 27309260 | 27378632 | 27447956 | 27517232 | 27586460 | 27655640 | 27724773 | 27793857 | 27862890 |
| 145 | 27931884 | 28000825 | 28069720 | 28138566 | 28207366 | 28276118 | 28344823 | 28413481 | 28482091 | 28550655 |
| 146 | 28619171 | 28687641 | 28756064 | 28824440 | 28892769 | 28961052 | 29029289 | 29097479 | 29165621 | 29233718 |
| 147 | 29301768 | 29369772 | 29437730 | 29505642 | 29573507 | 29641327 | 29709091 | 29776809 | 29844481 | 29912106 |
| 148 | 29979737 | 30047281 | 30114781 | 30182234 | 30249642 | 30317005 | 30384323 | 30451595 | 30518822 | 30586005 |
| 149 | 30653140 | 30720231 | 30787278 | 30854280 | 30921237 | 30988149 | 31055016 | 31121838 | 31188616 | 31255350 |

HYPERBOLIC LOGARITHMS.

TABLE of Hyperbolic Logarithms.

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| 151 | 31986493 | 32052696 | 32118856 | 32184971 | 32251043 | 32317072 | 32383057 | 32448998 | 32514896 | 32580750 |
| 152 | 32646561 | 32712329 | 32778054 | 32843735 | 32909374 | 32974969 | 33040521 | 33106031 | 33171497 | 33236921 |
| 153 | 33302301 | 33367640 | 33432935 | 33498188 | 33563398 | 33628566 | 33693691 | 33758774 | 33823815 | 33888813 |
| 154 | 33953770 | 34018684 | 34083555 | 34148385 | 34213173 | 34277919 | 34342623 | 34407285 | 34471905 | 34536484 |
| 155 | 34601021 | 34665516 | 34729970 | 34794382 | 34858753 | 34923082 | 34987370 | 35051617 | 35115823 | 35179987 |
| 156 | 35244110 | 35308192 | 35372233 | 35436229 | 35500190 | 35564110 | 35627988 | 35691824 | 35755620 | 35819375 |
| 157 | 35883090 | 35946764 | 36010397 | 36073990 | 36137543 | 36201055 | 36264527 | 36327959 | 36391350 | 36454701 |
| 158 | 36518013 | 36581284 | 36644515 | 36707706 | 36770857 | 36833969 | 36897040 | 36960072 | 37023064 | 37086017 |
| 159 | 37148930 | 37211803 | 37274637 | 37337431 | 37400186 | 37462902 | 37525578 | 37588215 | 37650813 | 37713371 |
| 160 | 37775891 | 37838371 | 37900813 | 37963215 | 38025579 | 38087904 | 38150189 | 38212437 | 38274645 | 38336815 |
| 161 | 38398946 | 38461038 | 38523092 | 38585108 | 38647085 | 38709024 | 38770924 | 38832786 | 38894610 | 38956395 |
| 162 | 39018143 | 39079852 | 39141523 | 39203157 | 39264752 | 39326309 | 39387829 | 39449311 | 39510755 | 39572161 |
| 163 | 39633529 | 39694860 | 39756154 | 39817409 | 39878628 | 39939808 | 40000952 | 40062058 | 40123126 | 40184158 |
| 164 | 40245152 | 40306109 | 40367029 | 40427912 | 40488758 | 40549566 | 40610338 | 40671073 | 40731771 | 40792432 |
| 165 | 40853057 | 40913644 | 40974195 | 41034710 | 41095188 | 41155629 | 41216033 | 41276402 | 41336734 | 41397029 |
| 166 | 41457288 | 41517511 | 41577698 | 41637848 | 41697962 | 41758040 | 41818082 | 41878088 | 41938058 | 41997992 |
| 167 | 42057891 | 42117753 | 42177579 | 42237370 | 42297125 | 42356844 | 42416528 | 42476176 | 42535789 | 42595366 |
| 168 | 42654907 | 42714413 | 42773884 | 42833319 | 42892719 | 42952084 | 43011414 | 43070708 | 43129968 | 43189192 |
| 169 | 43248381 | 43307535 | 43366654 | 43425738 | 43484788 | 43543802 | 43602782 | 43661727 | 43720637 | 43779512 |
| 170 | 43838353 | 43897159 | 43955931 | 44014668 | 44073371 | 44132039 | 44190673 | 44249272 | 44307837 | 44366368 |
| 171 | 44424865 | 44483327 | 44541756 | 44600150 | 44658510 | 44716836 | 44775128 | 44833386 | 44891610 | 44949801 |
| 172 | 45007957 | 45066080 | 45124168 | 45182224 | 45240245 | 45298223 | 45356187 | 45414108 | 45471995 | 45529849 |
| 173 | 45587669 | 45645456 | 45703209 | 45760929 | 45818616 | 45876269 | 45933890 | 45991477 | 46049031 | 46106551 |
| 174 | 46164039 | 46221494 | 46278916 | 46336305 | 46393760 | 46450983 | 46508273 | 46565531 | 46622756 | 46679947 |
| 175 | 46737107 | 46794233 | 46851327 | 46908388 | 46965417 | 47022414 | 47079377 | 47136309 | 47193208 | 47250074 |
| 176 | 47306909 | 47363711 | 47420481 | 47477218 | 47533924 | 47590597 | 47647238 | 47703847 | 47760424 | 47816969 |
| 177 | 47873483 | 47929964 | 47986413 | 48042831 | 48099216 | 48155570 | 48211892 | 48268183 | 48324442 | 48380669 |
| 178 | 48436864 | 48493302 | 48549161 | 48605262 | 48661331 | 48717369 | 48773376 | 48829352 | 48885296 | 48941208 |
| 179 | 48997090 | 49052940 | 49108759 | 49164547 | 49220304 | 49276030 | 49331725 | 49387389 | 49443022 | 49498623 |
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| 181 | 50108212 | 50163446 | 50218649 | 50273821 | 50328963 | 50384075 | 50439156 | 50494207 | 50549227 | 50604218 |
| 182 | 50659178 | 50714108 | 50769008 | 50823878 | 50878717 | 50933527 | 50988306 | 51043056 | 51097775 | 51152465 |
| 183 | 51207125 | 51261554 | 51316355 | 51370925 | 51425465 | 51479976 | 51534457 | 51588909 | 51643330 | 51697722 |
| 184 | 51752085 | 51806418 | 51860722 | 51914996 | 51969240 | 52023456 | 52077642 | 52131798 | 52185925 | 52240023 |
| 185 | 52294092 | 52348131 | 52402142 | 52456123 | 52510075 | 52563998 | 52617891 | 52671756 | 52725592 | 52779399 |
| 186 | 52833177 | 52886926 | 52940646 | 52994337 | 53048000 | 53101633 | 53155238 | 53208814 | 53262362 | 53315881 |
| 187 | 53369371 | 53422833 | 53476266 | 53529670 | 53583046 | 53636394 | 53689713 | 53743004 | 53796266 | 53849500 |
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| 189 | 54432211 | 54485107 | 54537975 | 54590815 | 54643627 | 54696412 | 54749168 | 54801897 | 54854598 | 54907271 |
| 190 | 54960917 | 55013534 | 55066124 | 55118687 | 55171222 | 55223729 | 55276208 | 55328661 | 55381085 | 55433482 |
| 191 | 55485852 | 55538194 | 55590509 | 55642797 | 55695057 | 55747290 | 55799496 | 55851674 | 55903826 | 55955950 |
| 192 | 56008047 | 56060116 | 56112159 | 56164175 | 56216163 | 56268125 | 56320059 | 56371967 | 56423848 | 56475701 |
| 193 | 56527528 | 56579328 | 56631101 | 56682848 | 56734568 | 56786261 | 56837927 | 56889566 | 56941179 | 56992766 |
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| 195 | 57558465 | 57609734 | 57660977 | 57712193 | 57763383 | 57814547 | 57865685 | 57916797 | 57967882 | 58018942 |
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| 197 | 58578882 | 58629631 | 58680354 | 58731051 | 58781722 | 58832368 | 58882988 | 58933582 | 58984151 | 59034695 |
| 198 | 59085212 | 59135705 | 59186171 | 59236613 | 59287029 | 59337419 | 59387784 | 59438124 | 59488439 | 59538728 |
| 199 | 59588992 | 59639230 | 59689544 | 59739832 | 59789795 | 59839933 | 59890046 | 59940133 | 59990196 | 60040233 |

HYPERBOLIC LOGARITHMS.

TABLE of Hyperbolic Logarithms.

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| 202 | 61085279 | 61134772 | 61184240 | 61233684 | 61283103 | 61332498 | 61381868 | 61431215 | 61480537 | 61529834 |
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| 204 | 62070509 | 62119516 | 62168520 | 62217459 | 62266395 | 62315307 | 62364195 | 62413059 | 62461899 | 62510715 |
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| 211 | 65444323 | 65491705 | 65539064 | 65586402 | 65633717 | 65681009 | 65728279 | 65775527 | 65822753 | 65870956 |
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| 215 | 67322312 | 67368813 | 67415292 | 67461750 | 67508186 | 67554600 | 67600993 | 67647365 | 67693715 | 67740043 |
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| 224 | 71423114 | 71467747 | 71512360 | 71556953 | 71601527 | 71646079 | 71690613 | 71735127 | 71779621 | 71824095 |
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| 231 | 74500280 | 74543561 | 74586823 | 74630036 | 74673291 | 74716496 | 74759684 | 74802852 | 74846002 | 74889133 |
| 232 | 74932246 | 74975341 | 75018416 | 75061473 | 75104512 | 75147531 | 75190533 | 75233516 | 75276481 | 75319427 |
| 233 | 75362355 | 75405264 | 75448155 | 75491027 | 75533881 | 75576716 | 75619534 | 75662333 | 75705114 | 75747877 |
| 234 | 75790621 | 75833347 | 75876054 | 75918743 | 75961415 | 76004068 | 76046703 | 76089320 | 76131918 | 76174498 |
| 235 | 76217061 | 76259605 | 76302131 | 76344639 | 76387129 | 76429600 | 76472054 | 76514490 | 76556908 | 76599308 |
| 236 | 76641690 | 76684203 | 76726640 | 76769072 | 76811498 | 76853930 | 76896364 | 76938796 | 76981200 | 77023520 |
| 237 | 77064523 | 77106909 | 77149287 | 77191655 | 77234012 | 77276357 | 77318688 | 77360994 | 77403281 | 77445552 |
| 238 | 77485577 | 77527585 | 77569575 | 77611548 | 77653503 | 77695440 | 77737360 | 77779263 | 77821147 | 77863015 |
| 239 | 77904864 | 77946696 | 77988511 | 78030309 | 78072089 | 78113851 | 78155596 | 78197323 | 78239034 | 78280726 |
| 240 | 78322402 | 78344060 | 78405700 | 78447323 | 78488930 | 78530518 | 78572090 | 78613644 | 78655181 | 78696700 |
| 241 | 78738203 | 78779688 | 78821156 | 78862607 | 78904040 | 78945457 | 78986856 | 79028238 | 79069603 | 79110951 |
| 242 | 79152282 | 79193595 | 79234892 | 79276172 | 79317435 | 79358680 | 79399909 | 79441120 | 79482315 | 79523493 |
| 243 | 79564654 | 79605797 | 79646924 | 79688034 | 79729127 | 79770204 | 79811263 | 79852305 | 79893331 | 79934339 |
| 244 | 79975332 | 80016307 | 80057265 | 80098207 | 80139132 | 80180040 | 80220932 | 80261806 | 80302664 | 80343506 |
| 245 | 80384330 | 80425138 | 80465932 | 80506704 | 80547462 | 80588204 | 80628929 | 80669637 | 80710329 | 80751004 |
| 246 | 80791663 | 80832305 | 80872931 | 80913539 | 80954122 | 80994709 | 81035268 | 81075812 | 81116338 | 81156849 |
| 247 | 81197543 | 81237821 | 81278282 | 81318727 | 81359155 | 81399567 | 81439963 | 81480343 | 81520706 | 81561053 |
| 248 | 81601384 | 81641698 | 81681957 | 81722279 | 81762544 | 81802794 | 81843027 | 81883244 | 81923445 | 81963630 |
| 249 | 82003799 | 82043952 | 82084088 | 82124208 | 82164313 | 82204401 | 82244473 | 82284529 | 82324569 | 82364593 |

HYPERBOLIC LOGARITHMS.

TABLE of Hyperbolic Logarithms.

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
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| 251 | 82803803 | 82843636 | 82883453 | 82923254 | 82963039 | 83002808 | 83042562 | 83082299 | 83122021 | 83161728 |
| 252 | 83201418 | 83241093 | 83280752 | 83320394 | 83360022 | 83399634 | 83439230 | 83478811 | 83518375 | 83557924 |
| 253 | 83597458 | 83636976 | 83676478 | 83715965 | 83755436 | 83794895 | 83834331 | 83873756 | 83913165 | 83952558 |
| 254 | 83991936 | 84031298 | 84070645 | 84109977 | 84149292 | 84188593 | 84227878 | 84267147 | 84306402 | 84345640 |
| 255 | 84384864 | 84424072 | 84463264 | 84502441 | 84541604 | 84580750 | 84619881 | 84658998 | 84698098 | 84737183 |
| 256 | 84776254 | 84815309 | 84854348 | 84893373 | 84932382 | 84971376 | 85010354 | 85049318 | 85088266 | 85127200 |
| 257 | 85166118 | 85205020 | 85243908 | 85282781 | 85321639 | 85360481 | 85399309 | 85438121 | 85476918 | 85515701 |
| 258 | 85554468 | 85593220 | 85631957 | 85670679 | 85709386 | 85748079 | 85786756 | 85825418 | 85864066 | 85902698 |
| 259 | 85941315 | 85979918 | 86018506 | 86057079 | 86095636 | 86134180 | 86172708 | 86211221 | 86249720 | 86288203 |
| 260 | 86326672 | 86365126 | 86403566 | 86441990 | 86480400 | 86518795 | 86557176 | 86595541 | 86633892 | 86672229 |
| 261 | 86710550 | 86748857 | 86787149 | 86825426 | 86863689 | 86901938 | 86940171 | 86978390 | 87016595 | 87054784 |
| 262 | 87092960 | 87131120 | 87169266 | 87207398 | 87245515 | 87283617 | 87321705 | 87359779 | 87397838 | 87435882 |
| 263 | 87473912 | 87511928 | 87549929 | 87587916 | 87625888 | 87663846 | 87701789 | 87739718 | 87777633 | 87815533 |
| 264 | 87853420 | 87891291 | 87929148 | 87966991 | 88004820 | 88042634 | 88080434 | 88118220 | 88155992 | 88193749 |
| 265 | 88231492 | 88269221 | 88306935 | 88344635 | 88382321 | 88419993 | 88457651 | 88495295 | 88532924 | 88570539 |
| 266 | 88608140 | 88645727 | 88683300 | 88720859 | 88758403 | 88795934 | 88833450 | 88870952 | 88908441 | 88945915 |
| 267 | 88983375 | 89020821 | 89058253 | 89095672 | 89133076 | 89170466 | 89207842 | 89245204 | 89282553 | 89319887 |
| 268 | 89357207 | 89394514 | 89431806 | 89469085 | 89506350 | 89543600 | 89580838 | 89618061 | 89655270 | 89692466 |
| 269 | 89729647 | 89766815 | 89803969 | 89841109 | 89878236 | 89915348 | 89952447 | 89989532 | 90026604 | 90063661 |
| 270 | 90100705 | 90137735 | 90174752 | 90211754 | 90248741 | 90285719 | 90322681 | 90359629 | 90396563 | 90433484 |
| 271 | 90470391 | 90507285 | 90544165 | 90581031 | 90617884 | 90654723 | 90691549 | 90728361 | 90765159 | 90801944 |
| 272 | 90838716 | 90875474 | 90912218 | 90948950 | 90985667 | 91022371 | 91059061 | 91095738 | 91132402 | 91169052 |
| 273 | 91205689 | 91242312 | 91278922 | 91315518 | 91352102 | 91388671 | 91425228 | 91461771 | 91498301 | 91534817 |
| 274 | 91571320 | 91607810 | 91644286 | 91680749 | 91717198 | 91753635 | 91790059 | 91826469 | 91862865 | 91899249 |
| 275 | 91935619 | 91971976 | 92008320 | 92044650 | 92080968 | 92117272 | 92153563 | 92189841 | 92226106 | 92262357 |
| 276 | 92298596 | 92334821 | 92371033 | 92407232 | 92443418 | 92479591 | 92515751 | 92551898 | 92588032 | 92624152 |
| 277 | 92660591 | 92696634 | 92732663 | 92768685 | 92804690 | 92840683 | 92876663 | 92912640 | 92948612 | 92984583 |
| 278 | 93020621 | 93056585 | 93092537 | 93128476 | 93164402 | 93200315 | 93236215 | 93272102 | 93307977 | 93343849 |
| 279 | 93379687 | 93415523 | 93451346 | 93487156 | 93522954 | 93558739 | 93594510 | 93630269 | 93666015 | 93701749 |
| 280 | 93737460 | 93773178 | 93808873 | 93844555 | 93880225 | 93915882 | 93951526 | 93987158 | 94022776 | 94058383 |
| 281 | 94093976 | 94129557 | 94165125 | 94200681 | 94236224 | 94271754 | 94307272 | 94342776 | 94378269 | 94413749 |
| 282 | 94448216 | 94483671 | 94520113 | 94555542 | 94590960 | 94626364 | 94661756 | 94697136 | 94732503 | 94767857 |
| 283 | 94803199 | 94838529 | 94873845 | 94909150 | 94944442 | 94979722 | 95014989 | 95050243 | 95085480 | 95120716 |
| 284 | 95155933 | 95191138 | 95226331 | 95261511 | 95296679 | 95331835 | 95366978 | 95402108 | 95437227 | 95472333 |
| 285 | 95507427 | 95542509 | 95577578 | 95612635 | 95647680 | 95682712 | 95717732 | 95752740 | 95787736 | 95822719 |
| 286 | 95857690 | 95892649 | 95927596 | 95962531 | 95997453 | 96032363 | 96067261 | 96102147 | 96137020 | 96171882 |
| 287 | 96206731 | 96241568 | 96276393 | 96311206 | 96346007 | 96380795 | 96415572 | 96450336 | 96485089 | 96519829 |
| 288 | 96554557 | 96589274 | 96623978 | 96658669 | 96693350 | 96728013 | 96762667 | 96797318 | 96831950 | 96866569 |
| 289 | 96901178 | 96935774 | 96970358 | 97004930 | 97039491 | 97074039 | 97108575 | 97143100 | 97177612 | 97212113 |
| 290 | 97246602 | 97281178 | 97315743 | 97350296 | 97384838 | 97419367 | 97453884 | 97488390 | 97522884 | 97557366 |
| 291 | 97590836 | 97625354 | 97659861 | 97694357 | 97728842 | 97763310 | 97797769 | 97832210 | 97866643 | 97901067 |
| 292 | 97935389 | 97969830 | 98004260 | 98038677 | 98073082 | 98107476 | 98141858 | 98176229 | 98210589 | 98244935 |
| 293 | 98275370 | 98309710 | 98344039 | 98378357 | 98412664 | 98446961 | 98481248 | 98515525 | 98549792 | 98584047 |
| 294 | 98619486 | 98653744 | 98687990 | 98722224 | 98756448 | 98790661 | 98824864 | 98859056 | 98893237 | 98927407 |
| 295 | 98956045 | 98990205 | 99024359 | 99058508 | 99092651 | 99126789 | 99160922 | 99195049 | 99229170 | 99263285 |
| 296 | 99297415 | 99331532 | 99365645 | 99399754 | 99433859 | 99467959 | 99502054 | 99536145 | 99570232 | 99604314 |
| 297 | 99638412 | 99672505 | 99706594 | 99740679 | 99774759 | 99808835 | 99842907 | 99876974 | 99911037 | 99945095 |
| 298 | 99977058 | 10000000 | 10003049 | 10006094 | 10009135 | 10012172 | 10015205 | 10018234 | 10021259 | 10024280 |
| 299 | 8.00302867 | 00336305 | 00369734 | 00403151 | 00436556 | 00469951 | 00503334 | 00536706 | 00570068 | 00603418 |

HYPERBOLIC LOGARITHMS.

TABLE of Hyperbolic Logarithms.

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
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| 300 | 8.00636756 | 00670085 | 00703401 | 00736706 | 00770001 | 00803285 | 00836557 | 00869818 | 00903068 | 00936307 |
| 301 | 00969536 | 01002753 | 01035959 | 01069154 | 01102338 | 01135511 | 01168673 | 01201824 | 01234964 | 01268093 |
| 302 | 01301211 | 01334318 | 01367414 | 01400499 | 01433573 | 01466637 | 01499689 | 01532731 | 01565761 | 01598781 |
| 303 | 01631789 | 01664788 | 01697775 | 01730750 | 01763716 | 01796670 | 01829613 | 01862547 | 01895468 | 01928379 |
| 304 | 01961279 | 01994169 | 02026047 | 02059915 | 02092772 | 02125618 | 02158453 | 02191278 | 02224091 | 02256895 |
| 305 | 02289687 | 02322469 | 02355239 | 02387999 | 02420748 | 02453487 | 02486215 | 02518932 | 02551639 | 02584334 |
| 306 | 02616019 | 02649694 | 02682357 | 02714010 | 02747653 | 02780285 | 02812905 | 02845516 | 02878116 | 02910705 |
| 307 | 02943284 | 02975852 | 03008409 | 03040956 | 03073492 | 03106017 | 03138533 | 03171038 | 03203531 | 03236015 |
| 308 | 03268488 | 03300949 | 03333401 | 03365843 | 03398273 | 03430694 | 03463103 | 03495502 | 03527891 | 03560269 |
| 309 | 03592636 | 03624994 | 03657340 | 03689677 | 03722003 | 03754318 | 03786623 | 03818918 | 03851202 | 03883475 |
| 310 | 03915739 | 03947992 | 03980234 | 04012466 | 04044688 | 04076899 | 04109100 | 04141291 | 04173471 | 04205641 |
| 311 | 04237800 | 04269949 | 04302088 | 04334217 | 04366335 | 04398443 | 04430540 | 04462627 | 04494705 | 04526772 |
| 312 | 04558828 | 04590874 | 04622910 | 04654935 | 04686951 | 04718966 | 04750951 | 04782936 | 04814916 | 04846874 |
| 313 | 04878828 | 04910772 | 04942705 | 04974629 | 05006542 | 05038445 | 05070338 | 05102221 | 05134093 | 05165956 |
| 314 | 05197808 | 05229649 | 05261481 | 05293304 | 05325115 | 05356917 | 05388708 | 05420489 | 05452260 | 05484022 |
| 315 | 05515773 | 05547514 | 05579245 | 05610965 | 05642676 | 05674377 | 05706068 | 05737749 | 05769419 | 05801080 |
| 316 | 05827311 | 05864371 | 05896001 | 05927622 | 05959233 | 05990833 | 06022424 | 06054005 | 06085575 | 06117136 |
| 317 | 06148687 | 06179227 | 06211758 | 06243279 | 06274790 | 06306291 | 06337782 | 06369263 | 06400735 | 06432196 |
| 318 | 06463647 | 06495089 | 06526520 | 06557942 | 06589354 | 06620757 | 06652148 | 06683531 | 06714904 | 06746266 |
| 319 | 06777620 | 06808963 | 06840295 | 06871619 | 06902932 | 06934236 | 06965531 | 06996815 | 07028089 | 07059354 |
| 320 | 07090609 | 07121854 | 07153089 | 07184315 | 07215531 | 07246737 | 07277933 | 07309120 | 07340297 | 07371464 |
| 321 | 07402622 | 07433769 | 07464908 | 07496036 | 07527154 | 07558264 | 07589363 | 07620453 | 07651532 | 07682603 |
| 322 | 07713664 | 07744715 | 07775756 | 07806788 | 07837810 | 07868823 | 07899825 | 07930819 | 07961803 | 07992777 |
| 323 | 08023742 | 08054697 | 08085642 | 08116578 | 08147504 | 08178421 | 08209328 | 08240225 | 08271113 | 08301992 |
| 324 | 08332861 | 08363720 | 08394570 | 08425411 | 08456242 | 08487063 | 08517875 | 08548677 | 08579470 | 08610254 |
| 325 | 08641028 | 08671792 | 08702547 | 08733293 | 08764028 | 08794755 | 08825473 | 08856181 | 08886879 | 08917568 |
| 326 | 08948247 | 08978918 | 09009578 | 09040230 | 09070872 | 09101504 | 09132127 | 09162741 | 09193346 | 09223941 |
| 327 | 09254526 | 09285103 | 09315660 | 09346227 | 09376775 | 09407315 | 09437844 | 09468365 | 09498876 | 09529378 |
| 328 | 09559870 | 09590353 | 09620827 | 09651292 | 09681747 | 09712193 | 09742630 | 09773057 | 09803476 | 09833885 |
| 329 | 09864284 | 09894675 | 09925056 | 09955428 | 09985791 | 10016145 | 10046489 | 10076824 | 10107150 | 10137467 |
| 330 | 10167775 | 10198073 | 10228362 | 10258643 | 10288913 | 10319175 | 10349428 | 10379671 | 10409906 | 10440131 |
| 331 | 10470347 | 10500554 | 10530752 | 10560940 | 10591119 | 10621290 | 10651452 | 10681604 | 10711747 | 10741881 |
| 332 | 10772606 | 10802812 | 10832999 | 10863177 | 10892416 | 10922595 | 10952765 | 10982928 | 11013080 | 11043224 |
| 333 | 11072758 | 11102784 | 11132800 | 11162808 | 11192806 | 11222796 | 11252776 | 11282748 | 11312710 | 11342664 |
| 334 | 11372609 | 11402544 | 11432471 | 11462389 | 11492297 | 11522197 | 11552088 | 11581970 | 11611843 | 11641707 |
| 335 | 11671562 | 11701409 | 11731246 | 11761075 | 11790894 | 11820705 | 11850507 | 11880300 | 11910084 | 11939859 |
| 336 | 11969625 | 11999383 | 12029131 | 12058871 | 12088602 | 12118324 | 12148037 | 12177742 | 12207438 | 12237124 |
| 337 | 12266802 | 12296472 | 12326132 | 12355784 | 12385426 | 12415060 | 12444686 | 12474302 | 12503910 | 12533509 |
| 338 | 12563099 | 12592680 | 12622253 | 12651817 | 12681372 | 12710919 | 12740456 | 12769985 | 12799506 | 12829017 |
| 339 | 12858520 | 12888014 | 12917500 | 12946976 | 12976444 | 13005904 | 13035355 | 13064797 | 13094230 | 13123655 |
| 340 | 13153071 | 13182478 | 13211727 | 13241267 | 13270649 | 13300022 | 13329386 | 13358742 | 13388089 | 13417427 |
| 341 | 13446757 | 13476078 | 13505391 | 13534695 | 13563990 | 13593277 | 13622555 | 13651825 | 13681086 | 13710339 |
| 342 | 13739583 | 13768818 | 13798045 | 13827264 | 13856474 | 13885675 | 13914868 | 13944052 | 13973228 | 14002395 |
| 343 | 14031554 | 14060704 | 14089846 | 14118979 | 14148104 | 14177220 | 14206328 | 14235428 | 14264519 | 14293601 |
| 344 | 14322675 | 14351741 | 14380798 | 14409846 | 14438887 | 14467918 | 14496942 | 14525957 | 14554963 | 14583961 |
| 345 | 14612951 | 14641932 | 14670905 | 14699870 | 14728826 | 14757774 | 14786713 | 14815644 | 14844567 | 14873481 |
| 346 | 14902387 | 14931284 | 14960174 | 14989054 | 15017927 | 15046791 | 15075647 | 15104495 | 15133334 | 15162165 |
| 347 | 15190987 | 15219802 | 15248608 | 15277405 | 15306195 | 15334976 | 15363749 | 15392513 | 15421269 | 15450018 |
| 348 | 15478757 | 15507489 | 15536211 | 15564927 | 15593634 | 15622332 | 15651023 | 15679705 | 15708379 | 15737044 |
| 349 | 15765702 | 15794351 | 15822992 | 15851624 | 15880249 | 15908865 | 15937474 | 15966074 | 15994666 | 16023249 |

HYPERBOLIC LOGARITHMS.

TABLE of Hyperbolic Logarithms.

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| 352 | 16621627 | 16650032 | 16678429 | 16706818 | 16735199 | 16763572 | 16791936 | 16820293 | 16848642 | 16876982 |
| 353 | 16905315 | 16933640 | 16961956 | 16990265 | 17018565 | 17046858 | 17075142 | 17103419 | 17131687 | 17159948 |
| 354 | 17188201 | 17216445 | 17244682 | 17272910 | 17301132 | 17329344 | 17357549 | 17385745 | 17413934 | 17442115 |
| 355 | 17470288 | 17498453 | 17526610 | 17554760 | 17582901 | 17611034 | 17639160 | 17667277 | 17695387 | 17723489 |
| 356 | 17751582 | 17779668 | 17807746 | 17835817 | 17863879 | 17891933 | 17919990 | 17948019 | 17976049 | 18004072 |
| 357 | 18032087 | 18060095 | 18088094 | 18116086 | 18144070 | 18172046 | 18200014 | 18227974 | 18255926 | 18283871 |
| 358 | 18311808 | 18339737 | 18367658 | 18395572 | 18423477 | 18451375 | 18479265 | 18507148 | 18535022 | 18562889 |
| 359 | 18590748 | 18618599 | 18646443 | 18674279 | 18702107 | 18729927 | 18757740 | 18785544 | 18813341 | 18841131 |
| 360 | 18868912 | 18896686 | 18924453 | 18952211 | 18979962 | 19007705 | 19035440 | 19063168 | 19090888 | 19118600 |
| 361 | 19146305 | 19174002 | 19201691 | 19229373 | 19257047 | 19284713 | 19312372 | 19340023 | 19367667 | 19395302 |
| 362 | 19422930 | 19450551 | 19478164 | 19505769 | 19533367 | 19560967 | 19588539 | 19616114 | 19643681 | 19671241 |
| 363 | 19698793 | 19726337 | 19753874 | 19781403 | 19808925 | 19836439 | 19863945 | 19891444 | 19918936 | 19946419 |
| 364 | 19973896 | 20001365 | 20028826 | 20056280 | 20083726 | 20111164 | 20138595 | 20166019 | 20193435 | 20220844 |
| 365 | 20248245 | 20275638 | 20303024 | 20330402 | 20357774 | 20385137 | 20412493 | 20439841 | 20467183 | 20494517 |
| 366 | 20521843 | 20549161 | 20576472 | 20603776 | 20631073 | 20658361 | 20685643 | 20712917 | 20740183 | 20767442 |
| 367 | 20794694 | 20821938 | 20849175 | 20876405 | 20903627 | 20930841 | 20958048 | 20985248 | 21012440 | 21039625 |
| 368 | 21066803 | 21093973 | 21121136 | 21148292 | 21175439 | 21202580 | 21229714 | 21256839 | 21283958 | 21311069 |
| 369 | 21338174 | 21365270 | 21392359 | 21419441 | 21446511 | 21473583 | 21500643 | 21527696 | 21554741 | 21581779 |
| 370 | 21608810 | 21635833 | 21662849 | 21689858 | 21716860 | 21743853 | 21770841 | 21797820 | 21824793 | 21851758 |
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| 372 | 22147895 | 22174773 | 22201644 | 22228507 | 22255364 | 22282213 | 22309055 | 22335890 | 22362718 | 22389538 |
| 373 | 22416351 | 22443157 | 22469956 | 22496748 | 22523532 | 22550309 | 22577090 | 22603843 | 22630599 | 22657347 |
| 374 | 22684089 | 22710823 | 22737551 | 22764271 | 22790984 | 22817690 | 22844388 | 22871080 | 22897764 | 22924442 |
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| 376 | 23217424 | 23244016 | 23270601 | 23297179 | 23323750 | 23350314 | 23376870 | 23403421 | 23429964 | 23456499 |
| 377 | 23483028 | 23509549 | 23536064 | 23562572 | 23589073 | 23615566 | 23642053 | 23668532 | 23695005 | 23721470 |
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| 380 | 24275635 | 24301947 | 24328252 | 24354551 | 24380842 | 24407137 | 24433405 | 24459675 | 24485939 | 24512196 |
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| 383 | 25062008 | 25088114 | 25114213 | 25140307 | 25166392 | 25192471 | 25218544 | 25244609 | 25270668 | 25296719 |
| 384 | 25322765 | 25348803 | 25374834 | 25400859 | 25426877 | 25452888 | 25478893 | 25504890 | 25530881 | 25556865 |
| 385 | 25582843 | 25608813 | 25634777 | 25660734 | 25686685 | 25712628 | 25738565 | 25764495 | 25790419 | 25816336 |
| 386 | 25842246 | 25868149 | 25894046 | 25919936 | 25945819 | 25971696 | 25997565 | 26023429 | 26049286 | 26075135 |
| 387 | 26100979 | 26126815 | 26152645 | 26178469 | 26204284 | 26230094 | 26255897 | 26281694 | 26307483 | 26333266 |
| 388 | 26359043 | 26384813 | 26410576 | 26436333 | 26462083 | 26487726 | 26513363 | 26538993 | 26564617 | 26590233 |
| 389 | 26616444 | 26642147 | 26667844 | 26693535 | 26719218 | 26744896 | 26770566 | 26796230 | 26821888 | 26847539 |
| 390 | 26873183 | 26898821 | 26924452 | 26950076 | 26975695 | 27001306 | 27026911 | 27052510 | 27078100 | 27103686 |
| 391 | 27129265 | 27154837 | 27180404 | 27205962 | 27231515 | 27257060 | 27282600 | 27308133 | 27333660 | 27359180 |
| 392 | 27384693 | 27410200 | 27435701 | 27461195 | 27486682 | 27512163 | 27537638 | 27563105 | 27588567 | 27614022 |
| 393 | 27639471 | 27664913 | 27690348 | 27715777 | 27741200 | 27766616 | 27792026 | 27817429 | 27842826 | 27868216 |
| 394 | 27893600 | 27919077 | 27944439 | 27969713 | 27995072 | 28020423 | 28045769 | 28071108 | 28096440 | 28121766 |
| 395 | 28147086 | 28172399 | 28197706 | 28223006 | 28248300 | 28273588 | 28298869 | 28324144 | 28349412 | 28374675 |
| 396 | 28399930 | 28425180 | 28450422 | 28475655 | 28500889 | 28526113 | 28551331 | 28576542 | 28601747 | 28626945 |
| 397 | 28652137 | 28677323 | 28702502 | 28727676 | 28752842 | 28778001 | 28803157 | 28828305 | 28853446 | 28878581 |
| 398 | 28903710 | 28928832 | 28953948 | 28979058 | 29004162 | 29029260 | 29054350 | 29079434 | 29104513 | 29129585 |
| 399 | 29154651 | 29179710 | 29204764 | 29229810 | 29254851 | 29279978 | 29305114 | 29329935 | 29354952 | 29379961 |

HYPERBOLIC LOGARITHMS.

TABLE of Hyperbolic Logarithms.

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|-----|------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 400 | 8.29404964 | 29429961 | 29454952 | 29479936 | 29504914 | 29529886 | 29554852 | 29579811 | 29604764 | 29629711 |
| 401 | 29654652 | 29679586 | 29704515 | 29729437 | 29754353 | 29779263 | 29804166 | 29829063 | 29853955 | 29878839 |
| 402 | 29903718 | 29928591 | 29953457 | 29978317 | 30003171 | 30028019 | 30052861 | 30077696 | 30102525 | 30127348 |
| 403 | 30152166 | 30176976 | 30201781 | 30226579 | 30251372 | 30276158 | 30300938 | 30325712 | 30350480 | 30375241 |
| 404 | 30399997 | 30424746 | 30449490 | 30474227 | 30498958 | 30523683 | 30548402 | 30573114 | 30597821 | 30622522 |
| 405 | 30647216 | 30671904 | 30696587 | 30721262 | 30745933 | 30770597 | 30795255 | 30819906 | 30844552 | 30869192 |
| 406 | 30893825 | 30918453 | 30943074 | 30967690 | 30992299 | 31016902 | 31041499 | 31066090 | 31090676 | 31115255 |
| 407 | 31139828 | 31164395 | 31188956 | 31213511 | 31238060 | 31262603 | 31287139 | 31311670 | 31336195 | 31360714 |
| 408 | 31385227 | 31409733 | 31434234 | 31458729 | 31483218 | 31507701 | 31532178 | 31556648 | 31581113 | 31605572 |
| 409 | 31630025 | 31654472 | 31678913 | 31703348 | 31727777 | 31752200 | 31776617 | 31801028 | 31825433 | 31849832 |
| 410 | 31874225 | 31898613 | 31922994 | 31947369 | 31971739 | 31996102 | 32020470 | 32044811 | 32069157 | 32093496 |
| 411 | 32117831 | 32142159 | 32166481 | 32190797 | 32215107 | 32239411 | 32263710 | 32288002 | 32312289 | 32336569 |
| 412 | 32360844 | 32385113 | 32409368 | 32433633 | 32457885 | 32482130 | 32506369 | 32530603 | 32554831 | 32579053 |
| 413 | 32603269 | 32627479 | 32651683 | 32675881 | 32700074 | 32724261 | 32748442 | 32772617 | 32796786 | 32820949 |
| 414 | 32845107 | 32869258 | 32893404 | 32917544 | 32941678 | 32965807 | 32989929 | 33014046 | 33038157 | 33062262 |
| 415 | 33086361 | 33110454 | 33134543 | 33158624 | 33182700 | 33206770 | 33220835 | 33244894 | 33268947 | 33292994 |
| 416 | 33327035 | 33351071 | 33375101 | 33399125 | 33423143 | 33447156 | 33471162 | 33495163 | 33519158 | 33543148 |
| 417 | 33567131 | 33591109 | 33615082 | 33639048 | 33663009 | 33686964 | 33710912 | 33734856 | 33758794 | 33782726 |
| 418 | 33806652 | 33830573 | 33854488 | 33878397 | 33902301 | 33926198 | 33950090 | 33973977 | 33997857 | 34021732 |
| 419 | 34045601 | 34069464 | 34093322 | 34117174 | 34141021 | 34164862 | 34188697 | 34212526 | 34236350 | 34260168 |
| 420 | 34283980 | 34307787 | 34331588 | 34355383 | 34389173 | 34402967 | 34426736 | 34450508 | 34474275 | 34498036 |
| 421 | 34521793 | 34545543 | 34570287 | 34599026 | 34616759 | 34640487 | 34664209 | 34687925 | 34711636 | 34735341 |
| 422 | 34759041 | 34782734 | 34806432 | 34830105 | 34853783 | 34877454 | 34901120 | 34924780 | 34948434 | 34972084 |
| 423 | 34995727 | 35019365 | 35042997 | 35066624 | 35090245 | 35113861 | 35137470 | 35161075 | 35184673 | 35208271 |
| 424 | 35231855 | 35255437 | 35279013 | 35302585 | 35326150 | 35349710 | 35373264 | 35396813 | 35420356 | 35443894 |
| 425 | 35467426 | 35490953 | 35514474 | 35537990 | 35561500 | 35585004 | 35608503 | 35631997 | 35655485 | 35678967 |
| 426 | 35702444 | 35725915 | 35749381 | 35772842 | 35796297 | 35819746 | 35843190 | 35866628 | 35890061 | 35913489 |
| 427 | 35936911 | 35960327 | 35983738 | 36007144 | 36030544 | 36053938 | 36077327 | 36100710 | 36124089 | 36147462 |
| 428 | 36170829 | 36194191 | 36217547 | 36240898 | 36264243 | 36287583 | 36310918 | 36334247 | 36357570 | 36380888 |
| 429 | 36404201 | 36427508 | 36450810 | 36474107 | 36497398 | 36520683 | 36543964 | 36567238 | 36590508 | 36613772 |
| 430 | 36637030 | 36660283 | 36683531 | 36706773 | 36730010 | 36753242 | 36776468 | 36799689 | 36822903 | 36846114 |
| 431 | 36879318 | 36892518 | 36915711 | 36938900 | 36962083 | 36985260 | 37008433 | 37031600 | 37054761 | 37077917 |
| 432 | 37101068 | 37124214 | 37147354 | 37170489 | 37193618 | 37216742 | 37239861 | 37262974 | 37286082 | 37309185 |
| 433 | 37332282 | 37355374 | 37378461 | 37401542 | 37424618 | 37447689 | 37470754 | 37493814 | 37516869 | 37539919 |
| 434 | 37562962 | 37586002 | 37609035 | 37632063 | 37655086 | 37678104 | 37701116 | 37724123 | 37747125 | 37770121 |
| 435 | 37793112 | 37816098 | 37839079 | 37862054 | 37885024 | 37907989 | 37930948 | 37953903 | 37976852 | 37999795 |
| 436 | 38022734 | 38045666 | 38068595 | 38091517 | 38114435 | 38137347 | 38160254 | 38183155 | 38206052 | 38228943 |
| 437 | 38251829 | 38274709 | 38297585 | 38320455 | 38343320 | 38366180 | 38389034 | 38411883 | 38434728 | 38457567 |
| 438 | 38480400 | 38503229 | 38526052 | 38548870 | 38571683 | 38594491 | 38617293 | 38640090 | 38662882 | 38685669 |
| 439 | 38708451 | 38731227 | 38753998 | 38776764 | 38799525 | 38822281 | 38845032 | 38867777 | 38890517 | 38913252 |
| 440 | 389335981 | 38958707 | 38981426 | 39004140 | 39016850 | 39049554 | 39072253 | 39094947 | 39117635 | 39140319 |
| 441 | 39162997 | 39185670 | 39208338 | 39231001 | 39253659 | 39276311 | 39298959 | 39321601 | 39344238 | 39366871 |
| 442 | 39389498 | 39412119 | 39434736 | 39457348 | 39479954 | 39502556 | 39525152 | 39547743 | 39565329 | 39592910 |
| 443 | 39615486 | 39638057 | 39660623 | 39683184 | 39705739 | 39728290 | 39750835 | 39773375 | 39795910 | 39818440 |
| 444 | 39840966 | 39863486 | 39886000 | 39908510 | 39931015 | 39953515 | 39976009 | 39998499 | 40020984 | 40043463 |
| 445 | 40065938 | 40088407 | 40110871 | 40133331 | 40155785 | 40178234 | 40200678 | 40223117 | 40245551 | 40267981 |
| 446 | 40290405 | 40312824 | 40335238 | 40357646 | 40380050 | 40402449 | 40424843 | 40447232 | 40469616 | 40491995 |
| 447 | 40514369 | 40536738 | 40559102 | 40581460 | 40603814 | 40626163 | 40648507 | 40670846 | 40693180 | 40715509 |
| 448 | 40737833 | 40760151 | 40782465 | 40804774 | 40827079 | 40849377 | 40871672 | 40893961 | 40916245 | 40938524 |
| 449 | 40960799 | 40983067 | 41005332 | 41027591 | 41049845 | 41072095 | 41094339 | 41116579 | 41138813 | 41151043 |

HYPERBOLIC LOGARITHMS.

TABLE of Hyperbolic Logarithms.

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| 450 | 8.41183268 | +1205487 | +1227702 | +1249912 | +1272117 | +1294317 | +1316512 | +1338702 | +1360888 | +1383068 |
| 451 | +1405243 | +1427414 | +1449579 | +1471740 | +1483896 | +1516047 | +1538193 | +1560334 | +1582469 | +1604601 |
| 452 | +1626727 | +1648849 | +1670965 | +1693077 | +1715184 | +1737286 | +1759383 | +1781474 | +1803562 | +1825644 |
| 453 | +1847722 | +1869794 | +1891862 | +1913925 | +1935983 | +1958036 | +1980085 | +2002128 | +2024167 | +2046200 |
| 454 | +2068229 | +2090253 | +2112272 | +2134287 | +2156296 | +2178301 | +2200300 | +2222295 | +2244286 | +2266271 |
| 455 | +2288251 | +2310227 | +2332198 | +2354164 | +2376125 | +2398081 | +2420033 | +2441979 | +2463921 | +2485858 |
| 456 | +2507790 | +2529718 | +2551640 | +2573558 | +2595471 | +2617379 | +2639282 | +2661181 | +2683075 | +2704964 |
| 457 | +2726848 | +2748728 | +2770603 | +2792472 | +2814337 | +2836198 | +2858053 | +2879904 | +2901750 | +2923591 |
| 458 | +2945428 | +2967259 | +2989086 | +3010908 | +3032726 | +3054539 | +3076347 | +3098149 | +3119948 | +3141741 |
| 459 | +3163530 | +3185314 | +3207094 | +3228868 | +3250638 | +3272405 | +3294164 | +3315920 | +3337671 | +3359407 |
| 460 | +3381158 | +3402895 | +3424627 | +3446354 | +3468077 | +3489795 | +3511508 | +3533217 | +3554920 | +3576619 |
| 461 | +3598314 | +3620003 | +3641688 | +3663368 | +3685044 | +3706715 | +3728381 | +3750042 | +3771699 | +3793351 |
| 462 | +3814998 | +3836641 | +3858279 | +3879912 | +3901541 | +3923165 | +3944784 | +3966399 | +3988009 | +4009614 |
| 463 | +4031215 | +4052811 | +4074402 | +4095989 | +4117571 | +4139148 | +4160720 | +4182288 | +4203852 | +4225410 |
| 464 | +4246965 | +4268514 | +4290059 | +4311599 | +4333134 | +4354665 | +4376191 | +4397713 | +4419230 | +4440742 |
| 465 | +4462250 | +4483753 | +4505251 | +4526745 | +4548234 | +4569719 | +4591209 | +4612674 | +4634145 | +4655611 |
| 466 | +4677073 | +4698530 | +4719982 | +4741430 | +4762873 | +4784311 | +4805745 | +4827175 | +4848599 | +4870020 |
| 467 | +4891435 | +4912846 | +4934252 | +4955654 | +4977051 | +4998444 | +5019832 | +5041216 | +5062595 | +5083969 |
| 468 | +5105339 | +5126704 | +5148065 | +5169421 | +5190773 | +5212119 | +5233462 | +5254800 | +5276133 | +5297462 |
| 469 | +5318786 | +5340106 | +5361421 | +5382732 | +5404038 | +5425339 | +5446636 | +5467929 | +5489217 | +5510500 |
| 470 | +5531779 | +5553053 | +5574323 | +5595588 | +5616849 | +5638105 | +5659357 | +5680604 | +5701847 | +5723085 |
| 471 | +5744318 | +5765548 | +5786773 | +5807993 | +5829208 | +5850420 | +5871626 | +5892828 | +5914026 | +5935219 |
| 472 | +5956408 | +5977592 | +5998772 | +6019947 | +6041118 | +6062284 | +6083446 | +6104603 | +6125756 | +6146904 |
| 473 | +6168048 | +6189188 | +6210323 | +6231453 | +6252579 | +6273700 | +6294818 | +6315930 | +6337038 | +6358142 |
| 474 | +6379242 | +6400336 | +6421427 | +6442513 | +6463594 | +6484671 | +6505744 | +6526812 | +6547876 | +6568935 |
| 475 | +6589990 | +6611040 | +6632087 | +6653128 | +6674165 | +6695197 | +6716226 | +6737250 | +6758269 | +6779284 |
| 476 | +6800295 | +6821311 | +6842303 | +6863300 | +6884292 | +6905282 | +6926266 | +6947246 | +6968221 | +6989192 |
| 477 | +7010158 | +7031121 | +7052078 | +7073032 | +7093981 | +7114925 | +7135866 | +7156801 | +7177733 | +7198660 |
| 478 | +7219583 | +7240501 | +7261415 | +7282324 | +7303230 | +7324130 | +7345027 | +7365919 | +7386807 | +7407690 |
| 479 | +7428569 | +7449444 | +7470314 | +7491180 | +7512042 | +7532899 | +7553752 | +7574600 | +7595445 | +7616284 |
| 480 | +7637120 | +7657951 | +7678778 | +7699600 | +7720418 | +7741232 | +7762042 | +7782847 | +7803648 | +7824444 |
| 481 | +7845236 | +7866024 | +7886808 | +7907587 | +7928362 | +7949132 | +7969899 | +7990661 | +8011418 | +8032172 |
| 482 | +8052921 | +8073665 | +8094406 | +8115142 | +8135874 | +8156601 | +8177325 | +8198044 | +8218758 | +8239469 |
| 483 | +8260175 | +8280876 | +8301574 | +8322267 | +8342956 | +8363641 | +8384321 | +8404997 | +8425669 | +8446337 |
| 484 | +8467000 | +8487659 | +8508314 | +8528964 | +8549611 | +8570252 | +8590890 | +8611524 | +8632153 | +8652778 |
| 485 | +8673398 | +8694015 | +8714627 | +8735235 | +8755839 | +8776438 | +8797033 | +8817624 | +8838211 | +8858793 |
| 486 | +8879372 | +8899946 | +8920516 | +8941081 | +8961642 | +8982200 | +9002752 | +9023301 | +9043845 | +9064386 |
| 487 | +9084922 | +9105453 | +9125981 | +9146504 | +9167023 | +9187538 | +9208049 | +9228556 | +9249058 | +9269556 |
| 488 | +9290050 | +9310540 | +9331025 | +9351506 | +9371984 | +9392456 | +9412925 | +9433390 | +9453850 | +9474306 |
| 489 | +9494758 | +9515206 | +9535650 | +9556089 | +9576524 | +9596956 | +9617382 | +9637805 | +9658224 | +9678638 |
| 490 | +9699048 | +9719455 | +9739856 | +9760254 | +9780648 | +9801037 | +9821422 | +9841804 | +9862181 | +9882553 |
| 491 | +9902022 | +9922387 | +9942747 | +9963103 | +9983455 | +10003803 | +10024047 | +10044287 | +10064522 | +10084754 |
| 492 | +10106381 | +10126604 | +10146823 | +10167038 | +10187249 | +10207455 | +10227658 | +10247856 | +10268050 | +10288241 |
| 493 | +10309427 | +10329709 | +10349986 | +10370260 | +10390530 | +10410795 | +10431057 | +10451314 | +10471567 | +10491816 |
| 494 | +10512061 | +10532302 | +10552539 | +10572771 | +10593000 | +10613224 | +10633445 | +10653661 | +10673873 | +10694082 |
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| 497 | +11117512 | +11137631 | +11157745 | +11177856 | +11197962 | +11218065 | +11238163 | +11258258 | +11278348 | +11298434 |
| 498 | +11318516 | +11338595 | +11358670 | +11378740 | +11398806 | +11418868 | +11438926 | +11458981 | +11479031 | +11499077 |
| 499 | +11519119 | +11539157 | +11559191 | +11579221 | +11599247 | +11619269 | +11639287 | +11659301 | +11679311 | +11699317 |

HYPERBOLIC LOGARITHMS.

TABLE of Hyperbolic Logarithms.

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| 500 | 8.51719319 | 51739317 | 51759312 | 51779301 | 51799287 | 51819269 | 51839247 | 51859221 | 51879191 | 51899157 |
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| 502 | 52118521 | 52138440 | 52158354 | 52178264 | 52198171 | 52218073 | 52237972 | 52257866 | 52277757 | 52297644 |
| 503 | 52317526 | 52337405 | 52357280 | 52377151 | 52397018 | 52416880 | 52436740 | 52456595 | 52476446 | 52496293 |
| 504 | 52516136 | 52535975 | 52555811 | 52575642 | 52595470 | 52615293 | 52635113 | 52654929 | 52674740 | 52694548 |
| 505 | 52714352 | 52734152 | 52753948 | 52773741 | 52793529 | 52813313 | 52833094 | 52852870 | 52872643 | 52892411 |
| 506 | 52912176 | 52931937 | 52951694 | 52971447 | 52991196 | 53010942 | 53030683 | 53050421 | 53070154 | 53089884 |
| 507 | 53109610 | 53129332 | 53149050 | 53168764 | 53188474 | 53208180 | 53227883 | 53247581 | 53267276 | 53286967 |
| 508 | 53306654 | 53326337 | 53346016 | 53365692 | 53385363 | 53405031 | 53424694 | 53444354 | 53464010 | 53483663 |
| 509 | 53503311 | 53522955 | 53542596 | 53562233 | 53581866 | 53601495 | 53621120 | 53640741 | 53660358 | 53679972 |
| 510 | 53699582 | 53719188 | 53738790 | 53758388 | 53777983 | 53797573 | 53817160 | 53836743 | 53856322 | 53875897 |
| 511 | 53895468 | 53915036 | 53934600 | 53954160 | 53973715 | 53993268 | 54012816 | 54032361 | 54051902 | 54071439 |
| 512 | 54090972 | 54110501 | 54130027 | 54149548 | 54169066 | 54188580 | 54208091 | 54227597 | 54247100 | 54266599 |
| 513 | 54286094 | 54305585 | 54325073 | 54344556 | 54364037 | 54383512 | 54402985 | 54422453 | 54441918 | 54461379 |
| 514 | 54480836 | 54500289 | 54519739 | 54539185 | 54558627 | 54578065 | 54597499 | 54616930 | 54636357 | 54655780 |
| 515 | 54675199 | 54694615 | 54714027 | 54733435 | 54752839 | 54772240 | 54791636 | 54811029 | 54830419 | 54849804 |
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| 520 | 55641391 | 55660610 | 55679845 | 55699066 | 55718284 | 55737498 | 55756709 | 55775915 | 55795118 | 55814318 |
| 521 | 55833514 | 55852706 | 55871894 | 55891078 | 55910259 | 55929437 | 55948610 | 55967780 | 55986947 | 56006109 |
| 522 | 56025268 | 56044422 | 56063574 | 56082723 | 56101867 | 56121008 | 56140145 | 56159278 | 56178409 | 56197533 |
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| 525 | 56598336 | 56617381 | 56636425 | 56655462 | 56674497 | 56693528 | 56712556 | 56731580 | 56750601 | 56769617 |
| 526 | 56788631 | 56807640 | 56826646 | 56845649 | 56864647 | 56883642 | 56902634 | 56921622 | 56940606 | 56959587 |
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| 530 | 57546210 | 57565076 | 57583939 | 57602798 | 57621653 | 57640505 | 57659353 | 57678198 | 57697040 | 57715877 |
| 531 | 57734711 | 57753542 | 57772369 | 57791193 | 57810013 | 57828829 | 57847642 | 57866451 | 57885257 | 57904059 |
| 532 | 57922858 | 57941654 | 57960445 | 57979233 | 57998018 | 58016799 | 58035577 | 58054351 | 58073121 | 58091888 |
| 533 | 58110652 | 58129412 | 58148168 | 58166921 | 58185671 | 58204416 | 58223159 | 58241898 | 58260633 | 58279365 |
| 534 | 58298073 | 58316818 | 58335559 | 58354297 | 58372972 | 58391682 | 58410389 | 58429093 | 58447794 | 58466491 |
| 535 | 58485184 | 58503874 | 58522560 | 58541243 | 58559922 | 58578598 | 58597271 | 58615940 | 58634605 | 58653267 |
| 536 | 58671925 | 58690580 | 58709232 | 58727880 | 58746524 | 58765166 | 58783803 | 58802437 | 58821068 | 58839695 |
| 537 | 58878519 | 58897093 | 58915655 | 58934216 | 58952777 | 58971335 | 58989888 | 59008438 | 59026984 | 59045527 |
| 538 | 59044365 | 59062951 | 59081533 | 59100112 | 59118687 | 59137259 | 59155827 | 59174392 | 59192954 | 59211512 |
| 539 | 59230066 | 59248618 | 59267165 | 59285710 | 59304250 | 59322788 | 59341322 | 59359852 | 59378379 | 59396903 |
| 540 | 59415423 | 59433940 | 59452453 | 59470963 | 59489470 | 59507973 | 59526473 | 59544969 | 59563462 | 59581951 |
| 541 | 59600437 | 59618920 | 59637399 | 59655875 | 59674347 | 59692816 | 59711282 | 59729744 | 59748202 | 59766658 |
| 542 | 59785109 | 59803558 | 59822003 | 59840445 | 59858883 | 59877318 | 59895749 | 59914177 | 59932602 | 59951023 |
| 543 | 59969441 | 59987856 | 60006267 | 60024675 | 60043079 | 60061480 | 60079878 | 60098272 | 60116663 | 60135050 |
| 544 | 60153434 | 60171815 | 60190192 | 60208566 | 60226936 | 60245304 | 60263667 | 60282028 | 60300385 | 60318738 |
| 545 | 60337089 | 60355436 | 60373779 | 60392119 | 60410456 | 60428790 | 60447120 | 60465447 | 60483770 | 60502090 |
| 546 | 60520407 | 60538720 | 60557030 | 60575337 | 60593640 | 60611940 | 60630237 | 60648530 | 60666820 | 60685106 |
| 547 | 60703390 | 60721669 | 60739946 | 60758210 | 60776480 | 60794755 | 60813019 | 60831278 | 60849535 | 60867788 |
| 548 | 60886038 | 60904284 | 60922528 | 60940768 | 60959004 | 60977237 | 60995467 | 61013694 | 61031917 | 61050137 |
| 549 | 61068353 | 61086567 | 61104777 | 61122783 | 61141187 | 61159587 | 61177983 | 61196377 | 61214767 | 61233154 |

HYPERBOLIC LOGARITHMS.

TABLE of Hyperbolic Logarithms.

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| 551 | 61431990 | 61450137 | 61468281 | 61486422 | 61504559 | 61522693 | 61540824 | 61558951 | 61577075 | 61595196 |
| 552 | 61613314 | 61631448 | 61649539 | 61667647 | 61685752 | 61703853 | 61721950 | 61740045 | 61758137 | 61776225 |
| 553 | 61794309 | 61812391 | 61830469 | 61848554 | 61866616 | 61884685 | 61902750 | 61920812 | 61938870 | 61956926 |
| 554 | 61974978 | 61993027 | 62011073 | 62029115 | 62047154 | 62065190 | 62083223 | 62101252 | 62119278 | 62137301 |
| 555 | 62155321 | 62173337 | 62191350 | 62209360 | 62227367 | 62245370 | 62263370 | 62281367 | 62299361 | 62317351 |
| 556 | 62335339 | 62353323 | 62371304 | 62389281 | 62407255 | 62425226 | 62443194 | 62461159 | 62479120 | 62497078 |
| 557 | 62515033 | 62532985 | 62550934 | 62568879 | 62586821 | 62604760 | 62622695 | 62640628 | 62658557 | 62676483 |
| 558 | 62694406 | 62712325 | 62730241 | 62748155 | 62766064 | 62783971 | 62801875 | 62819775 | 62837672 | 62855566 |
| 559 | 62873457 | 62891344 | 62909228 | 62927109 | 62944987 | 62962862 | 62980734 | 62998602 | 63016467 | 63034329 |
| 560 | 63052188 | 63070043 | 63087896 | 63105745 | 63123591 | 63141434 | 63159273 | 63177110 | 63194943 | 63212773 |
| 561 | 63230600 | 63248424 | 63266244 | 63284062 | 63301876 | 63319687 | 63337495 | 63355299 | 63373101 | 63390899 |
| 562 | 63408694 | 63426486 | 63444275 | 63462061 | 63479843 | 63497623 | 63515399 | 63533172 | 63550942 | 63568700 |
| 563 | 63586472 | 63604233 | 63621990 | 63639744 | 63657495 | 63675243 | 63692987 | 63710729 | 63728467 | 63746202 |
| 564 | 63763934 | 63781663 | 63799389 | 63817112 | 63834831 | 63852548 | 63870261 | 63887971 | 63905678 | 63923382 |
| 565 | 63941082 | 63958780 | 63976474 | 63994166 | 64011854 | 64029539 | 64047221 | 64064900 | 64082575 | 64100248 |
| 566 | 64117917 | 64135583 | 64153247 | 64170907 | 64188564 | 64206217 | 64223866 | 64241516 | 64259160 | 64276801 |
| 567 | 64294440 | 64312075 | 64329707 | 64347336 | 64364962 | 64382584 | 64400204 | 64417821 | 64435434 | 64453044 |
| 568 | 64470651 | 64488255 | 64505856 | 64523454 | 64541049 | 64558641 | 64576229 | 64593815 | 64611397 | 64628976 |
| 569 | 64646553 | 64664126 | 64681696 | 64699263 | 64716827 | 64734388 | 64751945 | 64769500 | 64787052 | 64804600 |
| 570 | 64822145 | 64839688 | 64857227 | 64874763 | 64892296 | 64909826 | 64927353 | 64944877 | 64962398 | 64979916 |
| 571 | 64997430 | 65014942 | 65032450 | 65049956 | 65067458 | 65084958 | 65102454 | 65119947 | 65137437 | 65154924 |
| 572 | 65172408 | 65189889 | 65207367 | 65224842 | 65242314 | 65259783 | 65277249 | 65294721 | 65312171 | 65329627 |
| 573 | 65347081 | 65364531 | 65381979 | 65399423 | 65416865 | 65434303 | 65451738 | 65469170 | 65486600 | 65504026 |
| 574 | 65521449 | 65538869 | 65556286 | 65573700 | 65591111 | 65608519 | 65625924 | 65643326 | 65660725 | 65678121 |
| 575 | 65695513 | 65712903 | 65730290 | 65747674 | 65765054 | 65782432 | 65799807 | 65817179 | 65834547 | 65851913 |
| 576 | 65869275 | 65886635 | 65903992 | 65921345 | 65938696 | 65956043 | 65973388 | 65990729 | 66008068 | 66025403 |
| 577 | 66042736 | 66060065 | 66077392 | 66094715 | 66112036 | 66129354 | 66146668 | 66163980 | 66181288 | 66198594 |
| 578 | 66215866 | 66233166 | 66250492 | 66267816 | 66285136 | 66302454 | 66319768 | 66337079 | 66354387 | 66371692 |
| 579 | 66388757 | 66406027 | 66423293 | 66440557 | 66457818 | 66475076 | 66492330 | 66509582 | 66526831 | 66544077 |
| 580 | 665761320 | 66578560 | 66595797 | 66613030 | 66630261 | 66647489 | 66664715 | 66681937 | 66699156 | 66716372 |
| 581 | 66733585 | 66750795 | 66768003 | 66785207 | 66802408 | 66819607 | 66836802 | 66853994 | 66871184 | 66888370 |
| 582 | 66905554 | 66922735 | 66939912 | 66957087 | 66974259 | 66991428 | 67008594 | 67025757 | 67042917 | 67060074 |
| 583 | 67077228 | 67094379 | 67111527 | 67128673 | 67145815 | 67162955 | 67180091 | 67197225 | 67214355 | 67231483 |
| 584 | 67248608 | 67265729 | 67282848 | 67299964 | 67317077 | 67334187 | 67351295 | 67368399 | 67385500 | 67402599 |
| 585 | 67419604 | 67436787 | 67453876 | 67470933 | 67488047 | 67505128 | 67522206 | 67539281 | 67556353 | 67573422 |
| 586 | 67590488 | 67607552 | 67624612 | 67641670 | 67658724 | 67675776 | 67692825 | 67709871 | 67726914 | 67743954 |
| 587 | 67760091 | 67777026 | 67793957 | 67810886 | 67827811 | 67844734 | 67861654 | 67878571 | 67895485 | 67912396 |
| 588 | 67931204 | 67948029 | 67964852 | 67981672 | 67998488 | 68015302 | 68032113 | 68048921 | 68065726 | 68082528 |
| 589 | 68101128 | 68117914 | 68134698 | 68151480 | 68168261 | 68185038 | 68201813 | 68218585 | 68235354 | 68252120 |
| 590 | 68270763 | 68287511 | 68304256 | 68321008 | 68337757 | 68354503 | 68371246 | 68387987 | 68404726 | 68421462 |
| 591 | 68440111 | 68457703 | 68475294 | 68492880 | 68509477 | 68526072 | 68542665 | 68559255 | 68575842 | 68592426 |
| 592 | 68609173 | 68626003 | 68642831 | 68659656 | 68676478 | 68693297 | 68710113 | 68726926 | 68743736 | 68760542 |
| 593 | 68777949 | 68794811 | 68811670 | 68828527 | 68845380 | 68862231 | 68879079 | 68895923 | 68912764 | 68929605 |
| 594 | 68946441 | 68963275 | 68980106 | 68996934 | 69013759 | 69030581 | 69047400 | 69064217 | 69081031 | 69097842 |
| 595 | 69114650 | 69131455 | 69148258 | 69165057 | 69181854 | 69198648 | 69215439 | 69232228 | 69249013 | 69265796 |
| 596 | 69282576 | 69299333 | 69316127 | 69332919 | 69349708 | 69366493 | 69383275 | 69399057 | 69415836 | 69432613 |
| 597 | 69450221 | 69466970 | 69483716 | 69500459 | 69517200 | 69533938 | 69550673 | 69567405 | 69584134 | 69600861 |
| 598 | 69617585 | 69634306 | 69651024 | 69667739 | 69684452 | 69701162 | 69717869 | 69734573 | 69751275 | 69767973 |
| 599 | 69784669 | 69801362 | 69818053 | 69834740 | 69851425 | 69868107 | 69884786 | 69901462 | 69918136 | 69934807 |

HYPERBOLIC LOGARITHMS.

TABLE of Hyperbolic Logarithms.

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
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| 602 | 70284254 | 70300864 | 70317471 | 70334075 | 70350677 | 70367276 | 70383872 | 70400465 | 70417056 | 70433644 |
| 603 | 70450229 | 70466811 | 70483391 | 70499968 | 70516542 | 70533113 | 70549682 | 70566248 | 70582811 | 70599371 |
| 604 | 70615929 | 70632484 | 70649035 | 70665586 | 70682132 | 70698676 | 70715218 | 70731756 | 70748292 | 70764825 |
| 605 | 70781355 | 70797883 | 70814408 | 70830930 | 70847449 | 70863966 | 70880480 | 70896991 | 70913499 | 70929005 |
| 606 | 70946508 | 70963008 | 70979505 | 70996001 | 71012493 | 71028982 | 71045469 | 71061953 | 71078434 | 71094913 |
| 607 | 71111388 | 71127862 | 71144332 | 71160800 | 71177265 | 71193727 | 71209186 | 71225643 | 71242097 | 71258549 |
| 608 | 71275998 | 71292444 | 71308887 | 71325327 | 71341765 | 71358201 | 71374633 | 71391063 | 71407490 | 71423914 |
| 609 | 71440336 | 71456755 | 71473171 | 71489585 | 71505996 | 71522404 | 71538810 | 71555213 | 71571613 | 71588010 |
| 610 | 71604405 | 71620797 | 71637187 | 71653573 | 71669957 | 71686339 | 71702717 | 71719093 | 71735467 | 71751837 |
| 611 | 71778205 | 71784571 | 71800933 | 71817293 | 71833650 | 71850005 | 71866357 | 71882706 | 71899052 | 71915396 |
| 612 | 71931738 | 71948076 | 71964411 | 71980745 | 71997076 | 72013404 | 72029729 | 72046051 | 72062371 | 72078688 |
| 613 | 72095003 | 72111311 | 72127624 | 72143931 | 72160235 | 72176536 | 72192834 | 72209130 | 72225424 | 72241714 |
| 614 | 72258002 | 72274287 | 72290570 | 72306850 | 72323128 | 72339402 | 72355674 | 72371944 | 72388211 | 72404475 |
| 615 | 72420736 | 72436995 | 72453251 | 72469505 | 72485756 | 72502004 | 72518250 | 72534492 | 72550733 | 72566971 |
| 616 | 72583206 | 72599438 | 72615668 | 72631895 | 72648120 | 72664342 | 72680561 | 72696777 | 72712992 | 72729203 |
| 617 | 72745412 | 72761618 | 72777821 | 72794022 | 72810221 | 72826416 | 72842609 | 72858800 | 72874987 | 72891173 |
| 618 | 72907355 | 72923535 | 72939712 | 72955887 | 72972059 | 72988229 | 73004395 | 73020560 | 73036721 | 73052880 |
| 619 | 73069037 | 73085190 | 73101342 | 73117490 | 73133636 | 73149779 | 73165920 | 73182058 | 73198194 | 73214327 |
| 620 | 73230457 | 73246585 | 73262710 | 73278832 | 73294952 | 73311070 | 73327185 | 73343297 | 73359406 | 73375513 |
| 621 | 73391618 | 73407719 | 73423818 | 73439915 | 73456009 | 73472100 | 73488189 | 73504275 | 73520359 | 73536440 |
| 622 | 73552519 | 73568594 | 73584668 | 73600738 | 73616807 | 73632872 | 73648935 | 73664995 | 73681053 | 73697109 |
| 623 | 73713161 | 73729211 | 73745259 | 73761304 | 73777346 | 73793386 | 73809423 | 73825458 | 73841490 | 73857519 |
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| 625 | 74033674 | 74049673 | 74065669 | 74081663 | 74097654 | 74113642 | 74129628 | 74145612 | 74161592 | 74177571 |
| 626 | 74193546 | 74209519 | 74225490 | 74241458 | 74257424 | 74273387 | 74289347 | 74305305 | 74321260 | 74337213 |
| 627 | 74333163 | 74349111 | 74365056 | 74380999 | 74416939 | 74432876 | 74448811 | 74464744 | 74480673 | 74496601 |
| 628 | 74512526 | 74528448 | 74544368 | 74560285 | 74576200 | 74592112 | 74608022 | 74623929 | 74639833 | 74655735 |
| 629 | 74671635 | 74687532 | 74703426 | 74719318 | 74735208 | 74751095 | 74766979 | 74782861 | 74798740 | 74814617 |
| 630 | 74830491 | 74846363 | 74862232 | 74878099 | 74893933 | 74909825 | 74925684 | 74941541 | 74957395 | 74973246 |
| 631 | 74989096 | 75004942 | 75020786 | 75036628 | 75052467 | 75068304 | 75084138 | 75099969 | 75115798 | 75131625 |
| 632 | 75147449 | 75163270 | 75179089 | 75194906 | 75210720 | 75226531 | 75242340 | 75258147 | 75273951 | 75289752 |
| 633 | 75305551 | 75321348 | 75337142 | 75352934 | 75368723 | 75384509 | 75400293 | 75416075 | 75431854 | 75447630 |
| 634 | 75463405 | 75479176 | 75494946 | 75510712 | 75526467 | 75542238 | 75557997 | 75573754 | 75589508 | 75605260 |
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| 639 | 76248955 | 76264603 | 76280249 | 76295892 | 76311533 | 76327171 | 76342807 | 76358441 | 76374072 | 76389701 |
| 640 | 76405327 | 76420951 | 76436572 | 76452191 | 76467807 | 76483421 | 76499033 | 76514642 | 76530249 | 76545853 |
| 641 | 76561455 | 76577054 | 76592651 | 76608246 | 76623838 | 76639428 | 76655015 | 76670600 | 76686182 | 76701762 |
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| 643 | 76872982 | 76888533 | 76904081 | 76919627 | 76935171 | 76950712 | 76966251 | 76981787 | 76997321 | 77012853 |
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| 646 | 77338460 | 77353938 | 77369415 | 77384889 | 77400360 | 77415829 | 77431296 | 77446760 | 77462222 | 77477682 |
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| 648 | 77647579 | 77663010 | 77678438 | 77693865 | 77709288 | 77724710 | 77740129 | 77755545 | 77770960 | 77786371 |
| 649 | 77801781 | 77817188 | 77832593 | 77847995 | 77863395 | 77878793 | 77894188 | 77909581 | 77924972 | 77940360 |

HYPERBOLIC LOGARITHMS.

TABLE of Hyperbolic Logarithms.

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| 652 | 78262966 | 78278302 | 78293636 | 78308967 | 78324296 | 78339623 | 78354948 | 78370270 | 78385590 | 78400907 |
| 653 | 78416222 | 78431535 | 78446875 | 78462153 | 78477459 | 78492763 | 78508064 | 78523362 | 78538659 | 78553953 |
| 654 | 78569274 | 78584534 | 78599821 | 78615106 | 78630388 | 78645668 | 78660946 | 78676221 | 78691494 | 78706765 |
| 655 | 78722033 | 78737299 | 78752563 | 78767824 | 78783083 | 78798340 | 78813594 | 78828846 | 78844096 | 78859343 |
| 656 | 78874588 | 78889831 | 78905071 | 78920309 | 78935545 | 78950779 | 78966010 | 78981239 | 78996465 | 79011689 |
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| 658 | 79179002 | 79194199 | 79209393 | 79224585 | 79239774 | 79254961 | 79270146 | 79285329 | 79300509 | 79315687 |
| 659 | 79330863 | 79346036 | 79361207 | 79376376 | 79391542 | 79406707 | 79421868 | 79437028 | 79452185 | 79467340 |
| 660 | 79482493 | 79497643 | 79512791 | 79527937 | 79543081 | 79558222 | 79573361 | 79588497 | 79603632 | 79618762 |
| 661 | 79633893 | 79649021 | 79664146 | 79679269 | 79694399 | 79709508 | 79724624 | 79739737 | 79754849 | 79769958 |
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| 669 | 80836915 | 80851862 | 80866806 | 80881748 | 80896688 | 80911626 | 80926561 | 80941494 | 80956425 | 80971354 |
| 670 | 80986281 | 81001205 | 81016128 | 81031047 | 81045964 | 81060880 | 81075793 | 81090704 | 81105612 | 81120519 |
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| 673 | 81433042 | 81447900 | 81462756 | 81477609 | 81492460 | 81507309 | 81522156 | 81537000 | 81551842 | 81566682 |
| 674 | 81585120 | 81596356 | 81611190 | 81626021 | 81640850 | 81655677 | 81670502 | 81685324 | 81700144 | 81714962 |
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| 684 | 83054301 | 83068920 | 83083536 | 83098151 | 83112764 | 83127374 | 83141982 | 83156588 | 83171192 | 83185794 |
| 685 | 83200303 | 83214991 | 83229586 | 83244179 | 83258770 | 83273359 | 83287946 | 83302531 | 83317113 | 83331694 |
| 686 | 83346272 | 83360848 | 83375422 | 83389994 | 83404564 | 83419132 | 83433697 | 83448261 | 83462822 | 83477381 |
| 687 | 83491939 | 83506494 | 83521046 | 83535597 | 83550146 | 83564692 | 83579237 | 83593779 | 83608319 | 83622857 |
| 688 | 83637393 | 83651927 | 83666459 | 83680988 | 83695516 | 83710041 | 83724564 | 83739086 | 83753605 | 83768122 |
| 689 | 83782636 | 83797149 | 83811660 | 83826168 | 83840675 | 83855179 | 83869681 | 83884181 | 83898679 | 83913175 |
| 690 | 83927669 | 83942161 | 83956650 | 83971138 | 83985623 | 84000107 | 84014588 | 84029067 | 84043544 | 84058019 |
| 691 | 84072492 | 84086962 | 84101431 | 84115898 | 84130362 | 84144824 | 84159285 | 84173743 | 84188199 | 84202653 |
| 692 | 84217105 | 84231555 | 84246002 | 84260448 | 84274892 | 84289333 | 84303772 | 84318210 | 84332645 | 84347078 |
| 693 | 84361509 | 84375938 | 84390365 | 84404790 | 84419213 | 84433633 | 84448052 | 84462468 | 84476883 | 84491295 |
| 694 | 84505705 | 84520114 | 84534520 | 84548924 | 84563326 | 84577725 | 84592123 | 84606519 | 84620913 | 84635304 |
| 695 | 84649694 | 84664081 | 84678467 | 84692850 | 84707231 | 84721610 | 84735988 | 84750363 | 84764736 | 84779106 |
| 696 | 84793475 | 84807842 | 84822207 | 84836569 | 84850930 | 84865289 | 84879645 | 84894000 | 84908352 | 84922702 |
| 697 | 84937050 | 84951397 | 84965741 | 84980083 | 84994423 | 85008761 | 85023097 | 85037430 | 85051762 | 85066092 |
| 698 | 85080420 | 85094745 | 85109069 | 85123390 | 85137710 | 85152027 | 85166343 | 85180656 | 85194967 | 85209276 |
| 699 | 85223584 | 85237889 | 85252192 | 85266493 | 85280791 | 85295089 | 85309384 | 85323676 | 85337967 | 85352256 |

HYPERBOLIC LOGARITHMS.

TABLE of Hyperbolic Logarithms.

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
|-----|------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 700 | 8.55366543 | 85380827 | 85395010 | 85409391 | 85423669 | 85437946 | 85452220 | 85466493 | 85480763 | 85495032 |
| 701 | 85509298 | 85523562 | 85537825 | 85552085 | 85566343 | 85580599 | 85594853 | 85609104 | 85623350 | 85637604 |
| 702 | 85651850 | 85666094 | 85680336 | 85694576 | 85708814 | 85723049 | 85737283 | 85751515 | 85765745 | 85779973 |
| 703 | 85794199 | 85808422 | 85822644 | 85836864 | 85851081 | 85865297 | 85879511 | 85893722 | 85907932 | 85922139 |
| 704 | 85936345 | 85950548 | 85964750 | 85978949 | 85993147 | 86007342 | 86021536 | 86035727 | 86049917 | 86064104 |
| 705 | 86078290 | 86092473 | 86106654 | 86120834 | 86135011 | 86149186 | 86163360 | 86177531 | 86191700 | 86205868 |
| 706 | 86220033 | 86234196 | 86248358 | 86262517 | 86276674 | 86290830 | 86304983 | 86319134 | 86333283 | 86347431 |
| 707 | 86361576 | 86375719 | 86389860 | 86404000 | 86418137 | 86432272 | 86446406 | 86460537 | 86474666 | 86488793 |
| 708 | 86502919 | 86517042 | 86531163 | 86545283 | 86559400 | 86573515 | 86587628 | 86601740 | 86615849 | 86629957 |
| 709 | 86644072 | 86658165 | 86672267 | 86686366 | 86700464 | 86714559 | 86728652 | 86742744 | 86756833 | 86770921 |
| 710 | 86785006 | 86799090 | 86813171 | 86827251 | 86841329 | 86855404 | 86869478 | 86883549 | 86897619 | 86911687 |
| 711 | 86925752 | 86939816 | 86953878 | 86967938 | 86981995 | 86996051 | 87010105 | 87024157 | 87038207 | 87052255 |
| 712 | 87066300 | 87080344 | 87094386 | 87108426 | 87122464 | 87136500 | 87150535 | 87164567 | 87178597 | 87192625 |
| 713 | 87200651 | 87222076 | 87234698 | 87248718 | 87262737 | 87276753 | 87290767 | 87304780 | 87318790 | 87332799 |
| 714 | 87344806 | 87360810 | 87374813 | 87388814 | 87402812 | 87416809 | 87430800 | 87444797 | 87458788 | 87472777 |
| 715 | 87486764 | 87500749 | 87514732 | 87528713 | 87542692 | 87556669 | 87570645 | 87584618 | 87598589 | 87612559 |
| 716 | 87626526 | 87640492 | 87654455 | 87668417 | 87682376 | 87696334 | 87710290 | 87724244 | 87738196 | 87752145 |
| 717 | 87766093 | 87780039 | 87793984 | 87807886 | 87821866 | 87835844 | 87849820 | 87863795 | 87877767 | 87891738 |
| 718 | 87905476 | 87919393 | 87933318 | 87947240 | 87961161 | 87975080 | 87988987 | 88002912 | 88016835 | 88030736 |
| 719 | 88044645 | 88058552 | 88072458 | 88086361 | 88100263 | 88114168 | 88128060 | 88141955 | 88155849 | 88169741 |
| 720 | 88183631 | 88197518 | 88211404 | 88225289 | 88239171 | 88253051 | 88266929 | 88280805 | 88294680 | 88308552 |
| 721 | 88322423 | 88336292 | 88350158 | 88364023 | 88377886 | 88391747 | 88405606 | 88419463 | 88433319 | 88447172 |
| 722 | 88461023 | 88474873 | 88488720 | 88502566 | 88516410 | 88530251 | 88544091 | 88557929 | 88571765 | 88585599 |
| 723 | 88599432 | 88613262 | 88627090 | 88640917 | 88654741 | 88668564 | 88682385 | 88696203 | 88710020 | 88723835 |
| 724 | 88737949 | 88751760 | 88765569 | 88779376 | 88793182 | 88806986 | 88820787 | 88834587 | 88848385 | 88862181 |
| 725 | 88875675 | 88889467 | 88903257 | 88917046 | 88930832 | 88944617 | 88958399 | 88972180 | 88985959 | 88999736 |
| 726 | 89013511 | 89027284 | 89041055 | 89054829 | 89068592 | 89082358 | 89096121 | 89109883 | 89123643 | 89137401 |
| 727 | 89151157 | 89164911 | 89178664 | 89192414 | 89206163 | 89219909 | 89233654 | 89247397 | 89261138 | 89274877 |
| 728 | 89288614 | 89302349 | 89316083 | 89329814 | 89343544 | 89357272 | 89370998 | 89384722 | 89398444 | 89412164 |
| 729 | 89425883 | 89439599 | 89453314 | 89467026 | 89480737 | 89494446 | 89508153 | 89521858 | 89535561 | 89549263 |
| 730 | 89562063 | 89575760 | 89589456 | 89603150 | 89616842 | 89630532 | 89644220 | 89657907 | 89671592 | 89685274 |
| 731 | 89698955 | 89712634 | 89726311 | 89740087 | 89753862 | 89767631 | 89781391 | 89795150 | 89808903 | 89822659 |
| 732 | 89836561 | 89850221 | 89863879 | 89877536 | 89891191 | 89904843 | 89918494 | 89932143 | 89945791 | 89959436 |
| 733 | 89977308 | 89990972 | 90004631 | 90018286 | 90031935 | 90045580 | 90059220 | 90072865 | 90086500 | 90100141 |
| 734 | 90109412 | 90123035 | 90136656 | 90150276 | 90163893 | 90177509 | 90191123 | 90204735 | 90218345 | 90231953 |
| 735 | 90245559 | 90259104 | 90272666 | 90286237 | 90309806 | 90323373 | 90336939 | 90350502 | 90364065 | 90377623 |
| 736 | 90381151 | 90394715 | 90408281 | 90421847 | 90435413 | 90448979 | 90462540 | 90476095 | 90489654 | 90503202 |
| 737 | 90517206 | 90530766 | 90544322 | 90557879 | 90571435 | 90584987 | 90598540 | 90612090 | 90625643 | 90639192 |
| 738 | 90652822 | 90666344 | 90679868 | 90693384 | 90706902 | 90720420 | 90733934 | 90747450 | 90760965 | 90774476 |
| 739 | 90788301 | 90801832 | 90815361 | 90828889 | 90842414 | 90855938 | 90869459 | 90882979 | 90896497 | 90910014 |
| 740 | 90923528 | 90937041 | 90950551 | 90964060 | 90977567 | 90991073 | 91004577 | 91018078 | 91031578 | 91045076 |
| 741 | 91058572 | 91072066 | 91085559 | 91099049 | 91112538 | 91126026 | 91139511 | 91152994 | 91166476 | 91179956 |
| 742 | 91193434 | 91206910 | 91220384 | 91233857 | 91247328 | 91260796 | 91274263 | 91287729 | 91301192 | 91314654 |
| 743 | 91328114 | 91341572 | 91355028 | 91368482 | 91381935 | 91395386 | 91408835 | 91422282 | 91435727 | 91449171 |
| 744 | 91462613 | 91476053 | 91489491 | 91502927 | 91516362 | 91529795 | 91543225 | 91556655 | 91570082 | 91583507 |
| 745 | 91596931 | 91610335 | 91623737 | 91637139 | 91650537 | 91663933 | 91677326 | 91690717 | 91704107 | 91717494 |
| 746 | 91731090 | 91744473 | 91757855 | 91771236 | 91784617 | 91797991 | 91811366 | 91824739 | 91838111 | 91851480 |
| 747 | 91865828 | 91879244 | 91892658 | 91906071 | 91919483 | 91932891 | 91946298 | 91959703 | 91973107 | 91986507 |
| 748 | 91998807 | 92012175 | 92025542 | 92038906 | 92052269 | 92065630 | 92078986 | 92092346 | 92105700 | 92119050 |
| 749 | 92132408 | 92145758 | 92159106 | 92172453 | 92185798 | 92199141 | 92212481 | 92225822 | 92239160 | 92252496 |

HYPERBOLIC LOGARITHMS.

TABLE of Hyperbolic Logarithms.

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|-----|------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
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| 751 | 92399075 | 92412389 | 92425702 | 92439013 | 92452323 | 92465630 | 92478936 | 92492240 | 92505542 | 92518843 |
| 752 | 92532142 | 92545439 | 92558734 | 92572027 | 92585319 | 92598609 | 92611897 | 92625184 | 92638468 | 92651751 |
| 753 | 92665032 | 92678311 | 92691589 | 92704865 | 92718139 | 92731411 | 92744682 | 92757950 | 92771217 | 92784483 |
| 754 | 92797746 | 92811008 | 92824268 | 92837526 | 92850782 | 92864037 | 92877290 | 92890541 | 92903791 | 92917038 |
| 755 | 92920284 | 92943528 | 92956771 | 92970011 | 92983250 | 92996488 | 93009723 | 93022957 | 93036188 | 93049419 |
| 756 | 93062647 | 93075874 | 93089098 | 93102322 | 93115543 | 93128763 | 93141981 | 93155197 | 93168411 | 93181624 |
| 757 | 93194835 | 93208044 | 93221251 | 93234457 | 93247661 | 93260863 | 93274064 | 93287262 | 93300459 | 93313654 |
| 758 | 93326848 | 93340040 | 93353230 | 93366418 | 93379604 | 93392789 | 93405972 | 93419154 | 93432333 | 93445511 |
| 759 | 93524542 | 93471861 | 93485034 | 93498205 | 93511374 | 93524541 | 93537707 | 93550871 | 93564033 | 93577194 |
| 760 | 93590353 | 93603510 | 93616665 | 93629819 | 93642970 | 93656121 | 93669269 | 93682415 | 93695560 | 93708704 |
| 761 | 93721845 | 93734985 | 93748123 | 93761259 | 93774394 | 93787527 | 93800658 | 93813787 | 93826915 | 93840041 |
| 762 | 93853165 | 93866287 | 93879408 | 93892527 | 93905645 | 93918760 | 93931874 | 93944986 | 93958097 | 93971205 |
| 763 | 93984312 | 93997418 | 94010521 | 94023623 | 94036723 | 94049822 | 94062919 | 94076014 | 94089107 | 94102198 |
| 764 | 94115288 | 94128376 | 94141463 | 94154548 | 94167631 | 94180712 | 94193791 | 94206869 | 94219946 | 94233020 |
| 765 | 94246093 | 94259164 | 94272233 | 94285301 | 94298367 | 94311431 | 94324493 | 94337554 | 94350613 | 94363671 |
| 766 | 94376726 | 94389780 | 94402838 | 94415883 | 94428932 | 94441979 | 94455025 | 94468068 | 94481110 | 94494151 |
| 767 | 94507190 | 94520226 | 94533262 | 94546295 | 94559327 | 94572357 | 94585386 | 94598413 | 94611438 | 94624461 |
| 768 | 94637483 | 94650503 | 94663521 | 94676538 | 94689552 | 94702566 | 94715577 | 94728587 | 94741595 | 94754602 |
| 769 | 94767606 | 94780609 | 94793611 | 94806610 | 94819608 | 94832605 | 94845599 | 94858592 | 94871583 | 94884573 |
| 770 | 94897561 | 94910547 | 94923531 | 94936514 | 94949495 | 94962475 | 94975453 | 94988429 | 95001403 | 95014376 |
| 771 | 95027347 | 95040316 | 95053284 | 95066250 | 95079214 | 95092177 | 95105137 | 95118097 | 95131054 | 95144010 |
| 772 | 95169664 | 95182617 | 95195568 | 95208517 | 95221464 | 95234409 | 95247354 | 95260297 | 95273238 | 95286177 |
| 773 | 95286414 | 95299350 | 95312284 | 95325216 | 95338147 | 95351076 | 95364004 | 95376929 | 95389854 | 95402776 |
| 774 | 95415697 | 95428616 | 95441533 | 95454449 | 95467363 | 95480275 | 95493186 | 95506095 | 95519002 | 95531908 |
| 775 | 95544812 | 95557715 | 95570615 | 95583514 | 95596411 | 95609308 | 95622202 | 95635094 | 95647985 | 95660874 |
| 776 | 95673761 | 95686647 | 95699531 | 95712414 | 95725294 | 95738174 | 95751051 | 95763927 | 95776801 | 95789674 |
| 777 | 95802544 | 95815414 | 95828281 | 95841147 | 95854011 | 95866874 | 95879735 | 95892594 | 95905452 | 95918307 |
| 778 | 95931162 | 95944014 | 95956865 | 95969715 | 95982562 | 95995408 | 96008253 | 96021096 | 96033937 | 96046776 |
| 779 | 96059614 | 96072450 | 96085285 | 96098117 | 96110949 | 96123778 | 96136606 | 96149432 | 96162257 | 96175080 |
| 780 | 96187901 | 96200721 | 96213539 | 96226355 | 96239170 | 96251983 | 96264795 | 96277605 | 96290413 | 96303219 |
| 781 | 96316024 | 96328828 | 96341629 | 96354429 | 96367228 | 96380024 | 96392819 | 96405613 | 96418405 | 96431195 |
| 782 | 96443983 | 96456770 | 96469556 | 96482339 | 96495121 | 96507901 | 96520680 | 96533457 | 96546233 | 96559007 |
| 783 | 96571779 | 96584550 | 96597318 | 96610086 | 96622851 | 96635616 | 96648378 | 96661139 | 96673898 | 96686655 |
| 784 | 96699411 | 96712166 | 96724918 | 96737669 | 96750419 | 96763167 | 96775913 | 96788657 | 96801400 | 96814141 |
| 785 | 96826881 | 96839619 | 96852356 | 96865090 | 96877824 | 96890555 | 96903285 | 96916013 | 96928740 | 96941465 |
| 786 | 96954189 | 96966910 | 96979631 | 96992349 | 97005066 | 97017782 | 97030495 | 97043207 | 97055918 | 97068627 |
| 787 | 97081334 | 97094042 | 97106744 | 97119446 | 97132147 | 97144846 | 97157544 | 97170240 | 97182934 | 97195627 |
| 788 | 97208318 | 97221008 | 97233696 | 97246382 | 97259067 | 97271750 | 97284431 | 97297111 | 97309790 | 97322466 |
| 789 | 97335141 | 97347815 | 97360487 | 97373157 | 97385826 | 97398493 | 97411158 | 97423822 | 97436484 | 97449145 |
| 790 | 97461804 | 97474461 | 97487117 | 97499771 | 97512424 | 97525075 | 97537724 | 97550372 | 97563018 | 97575663 |
| 791 | 97588306 | 97600948 | 97613587 | 97626226 | 97638862 | 97651497 | 97664131 | 97676763 | 97689393 | 97702021 |
| 792 | 97714649 | 97727274 | 97739898 | 97752520 | 97765141 | 97777760 | 97790377 | 97802993 | 97815608 | 97828220 |
| 793 | 97840832 | 97853441 | 97866049 | 97878655 | 97891260 | 97903863 | 97916465 | 97929065 | 97941663 | 97954260 |
| 794 | 97966855 | 97979449 | 97992041 | 98004631 | 98017221 | 98029808 | 98042394 | 98054978 | 98067560 | 98080141 |
| 795 | 98092721 | 98105299 | 98117875 | 98130450 | 98143023 | 98155594 | 98168164 | 98180732 | 98193299 | 98205864 |
| 796 | 98218428 | 98230990 | 98243550 | 98256109 | 98268667 | 98281222 | 98293776 | 98306329 | 98318880 | 98331429 |
| 797 | 98343977 | 98356523 | 98369068 | 98381611 | 98394153 | 98406693 | 98419231 | 98431768 | 98444303 | 98456837 |
| 798 | 98469369 | 98481900 | 98494429 | 98506956 | 98519482 | 98532006 | 98544529 | 98557050 | 98569569 | 98582087 |
| 799 | 98594604 | 98607119 | 98619632 | 98632144 | 98644654 | 98657162 | 98669670 | 98682175 | 98694679 | 98707181 |

HYPERBOLIC LOGARITHMS.

TABLE of Hyperbolic Logarithms.

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| 800 | 8.98719682 | 98732181 | 98744679 | 98757175 | 98769670 | 98782163 | 98794654 | 98807144 | 98819632 | 98832119 |
| 801 | 98844604 | 98857088 | 98869570 | 98882050 | 98894529 | 98907007 | 98919482 | 98931957 | 98944429 | 98956901 |
| 802 | 98969370 | 98981838 | 98994305 | 99006770 | 99019233 | 99031695 | 99044155 | 99056614 | 99069071 | 99081527 |
| 803 | 99093981 | 99106433 | 99118884 | 99131334 | 99143782 | 99156228 | 99168673 | 99181116 | 99193557 | 99205998 |
| 804 | 99218436 | 99230873 | 99243309 | 99255743 | 99268175 | 99280606 | 99293035 | 99305463 | 99317889 | 99330314 |
| 805 | 99342737 | 99355159 | 99367579 | 99379997 | 99392414 | 99404830 | 99417243 | 99429656 | 99442067 | 99454476 |
| 806 | 99466884 | 99479290 | 99491694 | 99504097 | 99516499 | 99528899 | 99541298 | 99553695 | 99566090 | 99578484 |
| 807 | 99590876 | 99603267 | 99615656 | 99628044 | 99640430 | 99652815 | 99665198 | 99677580 | 99689960 | 99702338 |
| 808 | 99714715 | 99727091 | 99739465 | 99751837 | 99764208 | 99776577 | 99788945 | 99801311 | 99813676 | 99826039 |
| 809 | 99838401 | 99850761 | 99863120 | 99875477 | 99887833 | 99900187 | 99912539 | 99924890 | 99937239 | 99949588 |
| 810 | 99961934 | 99974279 | 99986622 | 99998964 | 00011305 | 00023643 | 00035981 | 00048317 | 00060651 | 00072984 |
| 811 | 9.00085315 | 00097644 | 00109973 | 00122299 | 00134624 | 00146948 | 00159270 | 00171591 | 00183910 | 00196227 |
| 812 | 00208543 | 00220858 | 00233170 | 00245482 | 00257792 | 00270101 | 00282408 | 00294713 | 00307017 | 00319319 |
| 813 | 00331620 | 00343920 | 00356218 | 00368514 | 00380809 | 00393102 | 00405394 | 00417684 | 00429973 | 00442260 |
| 814 | 00454546 | 00466830 | 00479113 | 00491394 | 00503674 | 00515952 | 00528229 | 00540504 | 00552778 | 00565050 |
| 815 | 00577321 | 00589590 | 00601858 | 00614124 | 00626388 | 00638652 | 00650913 | 00663173 | 00675431 | 00687689 |
| 816 | 00699945 | 00712199 | 00724452 | 00736703 | 00748952 | 00761201 | 00773447 | 00785692 | 00797936 | 00810178 |
| 817 | 00822419 | 00834658 | 00846896 | 00859132 | 00871366 | 00883600 | 00895831 | 00908061 | 00920290 | 00932517 |
| 818 | 00944773 | 00956967 | 00969190 | 00981411 | 00993631 | 01005849 | 01018066 | 01030281 | 01042495 | 01054707 |
| 819 | 01066918 | 01079127 | 01091335 | 01103541 | 01115746 | 01127949 | 01140151 | 01152351 | 01164551 | 01176748 |
| 820 | 01188943 | 01201138 | 01213331 | 01225522 | 01237712 | 01249900 | 01262087 | 01274273 | 01286457 | 01298639 |
| 821 | 01310820 | 01323000 | 01335178 | 01347354 | 01359530 | 01371703 | 01383875 | 01396046 | 01408215 | 01420383 |
| 822 | 01432549 | 01444714 | 01456877 | 01469039 | 01481199 | 01493358 | 01505515 | 01517671 | 01529825 | 01541978 |
| 823 | 01554129 | 01566279 | 01578428 | 01590575 | 01602720 | 01614864 | 01627007 | 01639148 | 01651288 | 01663426 |
| 824 | 01675562 | 01687698 | 01699831 | 01711963 | 01724094 | 01736224 | 01748351 | 01760478 | 01772603 | 01784726 |
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| 826 | 01917987 | 01930092 | 01942197 | 01954300 | 01966401 | 01978501 | 01990600 | 02002697 | 02014792 | 02026886 |
| 827 | 02038979 | 02051070 | 02063160 | 02075248 | 02087335 | 02099420 | 02111504 | 02123586 | 02135667 | 02147747 |
| 828 | 02159825 | 02171901 | 02183976 | 02196050 | 02208122 | 02220193 | 02232262 | 02244330 | 02256396 | 02268461 |
| 829 | 02280525 | 02292587 | 02304647 | 02316706 | 02328764 | 02340820 | 02352875 | 02364928 | 02376980 | 02389030 |
| 830 | 02401070 | 02413127 | 02425173 | 02437217 | 02449261 | 02461302 | 02473342 | 02485381 | 02497418 | 02509454 |
| 831 | 02521489 | 02533522 | 02545553 | 02557583 | 02569611 | 02581639 | 02593665 | 02605689 | 02617712 | 02629733 |
| 832 | 02641753 | 02653772 | 02665789 | 02677805 | 02689819 | 02701832 | 02713843 | 02725853 | 02737861 | 02749868 |
| 833 | 02761874 | 02773878 | 02785880 | 02797881 | 02809881 | 02821880 | 02833876 | 02845872 | 02857866 | 02869858 |
| 834 | 02881850 | 02893839 | 02905828 | 02917814 | 02929800 | 02941784 | 02953766 | 02965747 | 02977727 | 02989705 |
| 835 | 03001682 | 03013657 | 03025631 | 03037603 | 03049575 | 03061544 | 03073512 | 03085479 | 03097444 | 03109408 |
| 836 | 03121371 | 03133339 | 03145291 | 03157249 | 03169206 | 03181161 | 03193115 | 03205068 | 03217019 | 03228968 |
| 837 | 03240916 | 03252863 | 03264808 | 03276752 | 03288695 | 03300636 | 03312575 | 03324513 | 03336450 | 03348386 |
| 838 | 03360310 | 03372252 | 03384183 | 03396112 | 03408041 | 03419967 | 03431893 | 03443817 | 03455739 | 03467660 |
| 839 | 03479580 | 03491498 | 03503415 | 03515330 | 03527244 | 03539157 | 03551068 | 03562978 | 03574886 | 03586793 |
| 840 | 03598699 | 03610603 | 03622505 | 03634406 | 03646306 | 03658205 | 03670102 | 03681997 | 03693891 | 03705784 |
| 841 | 03717675 | 03729565 | 03741454 | 03753341 | 03765226 | 03777111 | 03788994 | 03800875 | 03812755 | 03824634 |
| 842 | 03836511 | 03848386 | 03860261 | 03872134 | 03884005 | 03895876 | 03913744 | 03919612 | 03931478 | 03943342 |
| 843 | 03955205 | 03967067 | 03978927 | 03990776 | 04002643 | 04014500 | 04026354 | 04038207 | 04050059 | 04061910 |
| 844 | 04073759 | 04085616 | 04097453 | 04109297 | 04121141 | 04132983 | 04144824 | 04156663 | 04168501 | 04180337 |
| 845 | 04192172 | 04204006 | 04215838 | 04227669 | 04239498 | 04251326 | 04263153 | 04274978 | 04286802 | 04298624 |
| 846 | 04310445 | 04322265 | 04334083 | 04345900 | 04357715 | 04369530 | 04381342 | 04393153 | 04404963 | 04416779 |
| 847 | 04428579 | 04440384 | 04452189 | 04463992 | 04475793 | 04487593 | 04499392 | 04511189 | 04522985 | 04534780 |
| 848 | 04546573 | 04558365 | 04570155 | 04581944 | 04593732 | 04605518 | 04617303 | 04629086 | 04640868 | 04652649 |
| 849 | 04664428 | 04676206 | 04687982 | 04699757 | 04711531 | 04723303 | 04735074 | 04746844 | 04758612 | 04770379 |

HYPERBOLIC LOGARITHMS.

TABLE of Hyperbolic Logarithms.

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
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| 851 | 04899722 | 04911472 | 04923221 | 04934969 | 04946715 | 04958459 | 04970203 | 04981945 | 04993685 | 05005424 |
| 852 | 05017162 | 05028898 | 05040633 | 05052367 | 05064099 | 05075830 | 05087560 | 05099288 | 05111015 | 05122740 |
| 853 | 05134464 | 05146187 | 05157908 | 05169628 | 05181346 | 05193064 | 05204779 | 05216494 | 05228207 | 05239918 |
| 854 | 05251629 | 05263338 | 05275045 | 05286751 | 05298456 | 05310160 | 05321862 | 05333562 | 05345262 | 05356960 |
| 855 | 05368656 | 05380351 | 05392045 | 05403738 | 05415429 | 05427119 | 05438807 | 05450494 | 05462180 | 05473864 |
| 856 | 05485547 | 05497229 | 05508909 | 05520588 | 05532265 | 05543941 | 05555616 | 05567289 | 05578961 | 05590632 |
| 857 | 05602301 | 05613969 | 05625636 | 05637301 | 05648968 | 05660627 | 05672288 | 05683948 | 05695607 | 05707264 |
| 858 | 05718919 | 05730574 | 05742227 | 05753878 | 05765528 | 05777177 | 05788825 | 05800471 | 05812116 | 05823759 |
| 859 | 05835402 | 05847042 | 05858682 | 05870320 | 05881956 | 05893592 | 05905226 | 05916858 | 05928490 | 05940120 |
| 860 | 05955174 | 05966815 | 05978450 | 05990086 | 06001721 | 06013356 | 06024991 | 06036625 | 06048258 | 06059891 |
| 861 | 06071525 | 06083159 | 06094792 | 06106425 | 06118057 | 06129689 | 06141321 | 06152952 | 06164583 | 06176214 |
| 862 | 06187846 | 06199478 | 06211109 | 06222740 | 06234371 | 06245999 | 06257628 | 06269256 | 06280884 | 06292511 |
| 863 | 06304155 | 06315786 | 06327415 | 06339044 | 06350672 | 06362300 | 06373928 | 06385555 | 06397182 | 06408809 |
| 864 | 06410436 | 06422063 | 06433690 | 06445316 | 06456942 | 06468567 | 06480192 | 06491817 | 06503442 | 06515067 |
| 865 | 06526692 | 06538317 | 06549942 | 06561567 | 06573191 | 06584816 | 06596440 | 06608065 | 06619689 | 06631314 |
| 866 | 06642938 | 06654563 | 06666188 | 06677812 | 06689437 | 06701061 | 06712686 | 06724310 | 06735935 | 06747559 |
| 867 | 06759183 | 06770808 | 06782432 | 06794057 | 06805681 | 06817306 | 06828930 | 06840554 | 06852179 | 06863803 |
| 868 | 06875427 | 06887052 | 06898676 | 06910301 | 06921925 | 06933550 | 06945174 | 06956799 | 06968423 | 06980047 |
| 869 | 06992822 | 07004447 | 07016071 | 07027696 | 07039320 | 07050944 | 07062569 | 07074193 | 07085817 | 07097442 |
| 870 | 07109031 | 07120656 | 07132280 | 07143905 | 07155529 | 07167153 | 07178778 | 07190402 | 07202027 | 07213651 |
| 871 | 07225276 | 07236900 | 07248525 | 07260149 | 07271773 | 07283398 | 07295022 | 07306646 | 07318271 | 07329895 |
| 872 | 07341420 | 07353045 | 07364670 | 07376294 | 07387919 | 07399543 | 07411168 | 07422792 | 07434417 | 07446041 |
| 873 | 07457665 | 07469290 | 07480914 | 07492539 | 07504163 | 07515788 | 07527412 | 07539037 | 07550661 | 07562286 |
| 874 | 07573910 | 07585534 | 07597159 | 07608783 | 07620408 | 07632032 | 07643657 | 07655281 | 07666906 | 07678530 |
| 875 | 07690625 | 07702249 | 07713874 | 07725498 | 07737122 | 07748747 | 07760371 | 07771995 | 07783620 | 07795244 |
| 876 | 07796869 | 07808493 | 07820117 | 07831742 | 07843366 | 07854990 | 07866615 | 07878239 | 07889863 | 07901488 |
| 877 | 07912609 | 07924233 | 07935857 | 07947482 | 07959106 | 07970730 | 07982354 | 07993979 | 08005603 | 08017227 |
| 878 | 08028869 | 08040493 | 08052117 | 08063741 | 08075365 | 08086990 | 08098614 | 08110238 | 08121862 | 08133486 |
| 879 | 08145131 | 08156755 | 08168379 | 08179903 | 08191527 | 08203151 | 08214775 | 08226400 | 08238024 | 08249648 |
| 880 | 08260270 | 08271894 | 08283518 | 08295142 | 08306766 | 08318390 | 08329914 | 08341538 | 08353162 | 08364786 |
| 881 | 08376401 | 08388025 | 08399649 | 08411273 | 08422897 | 08434521 | 08446145 | 08457769 | 08469393 | 08481017 |
| 882 | 08492166 | 08503790 | 08515414 | 08527038 | 08538662 | 08550286 | 08561910 | 08573534 | 08585158 | 08596782 |
| 883 | 08612427 | 08624051 | 08635675 | 08647299 | 08658923 | 08670547 | 08682171 | 08693795 | 08705419 | 08717043 |
| 884 | 08728667 | 08740291 | 08751915 | 08763539 | 08775163 | 08786787 | 08798411 | 08810035 | 08821659 | 08833283 |
| 885 | 08844907 | 08856531 | 08868155 | 08879779 | 08891403 | 08903027 | 08914651 | 08926275 | 08937899 | 08949523 |
| 886 | 08960162 | 08971786 | 08983410 | 08995034 | 09006658 | 09018282 | 09029906 | 09041530 | 09053154 | 09064778 |
| 887 | 09076403 | 09088027 | 09099651 | 09111275 | 09122900 | 09134524 | 09146148 | 09157772 | 09169396 | 09181020 |
| 888 | 09192665 | 09204289 | 09215913 | 09227537 | 09239161 | 09250785 | 09262409 | 09274033 | 09285657 | 09297281 |
| 889 | 09308902 | 09320526 | 09332150 | 09343774 | 09355398 | 09367022 | 09378646 | 09390270 | 09401894 | 09413518 |
| 890 | 09425142 | 09436766 | 09448390 | 09459914 | 09471538 | 09483162 | 09494786 | 09506410 | 09518034 | 09529658 |
| 891 | 09540862 | 09552486 | 09564110 | 09575734 | 09587358 | 09598982 | 09610606 | 09622230 | 09633854 | 09645478 |
| 892 | 09657093 | 09668717 | 09680341 | 09691965 | 09703589 | 09715213 | 09726837 | 09738461 | 09750085 | 09761709 |
| 893 | 09773336 | 09784960 | 09796584 | 09808208 | 09819832 | 09831456 | 09843080 | 09854704 | 09866328 | 09877952 |
| 894 | 09889571 | 09901195 | 09912819 | 09924443 | 09936067 | 09947691 | 09959315 | 09970939 | 09982563 | 09994187 |
| 895 | 09995811 | 10007435 | 10019059 | 10030683 | 10042307 | 10053931 | 10065555 | 10077179 | 10088803 | 10100427 |
| 896 | 10112051 | 10123675 | 10135300 | 10146924 | 10158548 | 10170172 | 10181796 | 10193420 | 10205044 | 10216668 |
| 897 | 10228293 | 10239917 | 10251541 | 10263165 | 10274789 | 10286413 | 10298037 | 10309661 | 10321285 | 10332909 |
| 898 | 10344553 | 10356177 | 10367801 | 10379425 | 10391049 | 10402673 | 10414297 | 10425921 | 10437545 | 10449169 |
| 899 | 10460790 | 10472414 | 10484038 | 10495662 | 10507286 | 10518910 | 10530534 | 10542158 | 10553782 | 10565406 |

HYPERBOLIC LOGARITHMS.

TABLE of Hyperbolic Logarithms.

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| 901 | 10609035 | 10620133 | 10631230 | 10642326 | 10653422 | 10664514 | 10675606 | 10686696 | 10697786 | 10708874 |
| 902 | 10719951 | 10731047 | 10742132 | 10753215 | 10764297 | 10775378 | 10786459 | 10797537 | 10808614 | 10819690 |
| 903 | 10830765 | 10841838 | 10852911 | 10863982 | 10875052 | 10886120 | 10897188 | 10908254 | 10919319 | 10930383 |
| 904 | 10941445 | 10952507 | 10963567 | 10974626 | 10985683 | 10996740 | 11007795 | 11018849 | 11029902 | 11040953 |
| 905 | 11052004 | 11063053 | 11074101 | 11085147 | 11096193 | 11107237 | 11118280 | 11129322 | 11140362 | 11151402 |
| 906 | 11162440 | 11173477 | 11184513 | 11195547 | 11206580 | 11217612 | 11228643 | 11239693 | 11250701 | 11261728 |
| 907 | 11272754 | 11283779 | 11294803 | 11305825 | 11316846 | 11327866 | 11338885 | 11349902 | 11360918 | 11371933 |
| 908 | 11382947 | 11393960 | 11404971 | 11415981 | 11426990 | 11437998 | 11449005 | 11460010 | 11471014 | 11482017 |
| 909 | 11493019 | 11504019 | 11515019 | 11526017 | 11537013 | 11548009 | 11559004 | 11569997 | 11580989 | 11591980 |
| 910 | 11602957 | 11613958 | 11624945 | 11635931 | 11646916 | 11657899 | 11668882 | 11679863 | 11690843 | 11701821 |
| 911 | 11712799 | 11723775 | 11734751 | 11745724 | 11756697 | 11767669 | 11778639 | 11789608 | 11800571 | 11811543 |
| 912 | 11822508 | 11833473 | 11844436 | 11855398 | 11866358 | 11877318 | 11888276 | 11899233 | 11910189 | 11921144 |
| 913 | 11932097 | 11943050 | 11954001 | 11964951 | 11975899 | 11986847 | 11997793 | 12008738 | 12019682 | 12030625 |
| 914 | 12041566 | 12052507 | 12063446 | 12074384 | 12085321 | 12096256 | 12107190 | 12118125 | 12129056 | 12139986 |
| 915 | 12150916 | 12161844 | 12172771 | 12183697 | 12194622 | 12205546 | 12216468 | 12227389 | 12238309 | 12249228 |
| 916 | 12260146 | 12271062 | 12281977 | 12292892 | 12303804 | 12314716 | 12325633 | 12336536 | 12347444 | 12358341 |
| 917 | 12369257 | 12380161 | 12391064 | 12401965 | 12412868 | 12423767 | 12434666 | 12445563 | 12456460 | 12467355 |
| 918 | 12478248 | 12489141 | 12500033 | 12510923 | 12521812 | 12532700 | 12543587 | 12554472 | 12565356 | 12576240 |
| 919 | 12587122 | 12598002 | 12608882 | 12619760 | 12630638 | 12641514 | 12652389 | 12663262 | 12674135 | 12685006 |
| 920 | 12695876 | 12706745 | 12717613 | 12728480 | 12739345 | 12750209 | 12761072 | 12771934 | 12782795 | 12793655 |
| 921 | 12804713 | 12815570 | 12826426 | 12837281 | 12848135 | 12858987 | 12869838 | 12880688 | 12891537 | 12902385 |
| 922 | 12913032 | 12923877 | 12934721 | 12945564 | 12956406 | 12967247 | 12978087 | 12988925 | 12999762 | 13010598 |
| 923 | 13021433 | 13032266 | 13043099 | 13053930 | 13064760 | 13075589 | 13086417 | 13097244 | 13108069 | 13118893 |
| 924 | 13129716 | 13140538 | 13151359 | 13162179 | 13172997 | 13183814 | 13194631 | 13205445 | 13216259 | 13227072 |
| 925 | 13237883 | 13248693 | 13259502 | 13270310 | 13281117 | 13291923 | 13302727 | 13313530 | 13324332 | 13335133 |
| 926 | 13345933 | 13356731 | 13367529 | 13378325 | 13389120 | 13399914 | 13410707 | 13421498 | 13432289 | 13443078 |
| 927 | 13453866 | 13464653 | 13475439 | 13486223 | 13497007 | 13507789 | 13518570 | 13529350 | 13540129 | 13550906 |
| 928 | 13561683 | 13572458 | 13583232 | 13594005 | 13604777 | 13615547 | 13626317 | 13637085 | 13647852 | 13658618 |
| 929 | 13669383 | 13680147 | 13690909 | 13701671 | 13712431 | 13723190 | 13733948 | 13744705 | 13755460 | 13766215 |
| 930 | 13776968 | 13787720 | 13798471 | 13809221 | 13819969 | 13830717 | 13841463 | 13852208 | 13862952 | 13873695 |
| 931 | 13884437 | 13895178 | 13905917 | 13916655 | 13927392 | 13938128 | 13948863 | 13959597 | 13970329 | 13981061 |
| 932 | 13991791 | 14002520 | 14013248 | 14023974 | 14034700 | 14045425 | 14056148 | 14066870 | 14077591 | 14088311 |
| 933 | 14099029 | 14109747 | 14120463 | 14131179 | 14141893 | 14152606 | 14163318 | 14174028 | 14184738 | 14195446 |
| 934 | 14206153 | 14216859 | 14227564 | 14238268 | 14248971 | 14259672 | 14270372 | 14281072 | 14291770 | 14302466 |
| 935 | 14313162 | 14323857 | 14334550 | 14345243 | 14355934 | 14366624 | 14377313 | 14388001 | 14398687 | 14409373 |
| 936 | 14420057 | 14430740 | 14441422 | 14452103 | 14462783 | 14473462 | 14484139 | 14494815 | 14505491 | 14516165 |
| 937 | 14526838 | 14537509 | 14548180 | 14558850 | 14569518 | 14580185 | 14590851 | 14601516 | 14612180 | 14622842 |
| 938 | 14633504 | 14644165 | 14654824 | 14665486 | 14676139 | 14686795 | 14697450 | 14708103 | 14718756 | 14729407 |
| 939 | 14740057 | 14750706 | 14761354 | 14772001 | 14782647 | 14793291 | 14803935 | 14814577 | 14825218 | 14835858 |
| 940 | 14846497 | 14857135 | 14867771 | 14878407 | 14889041 | 14899674 | 14910306 | 14920937 | 14931567 | 14942196 |
| 941 | 14952823 | 14963450 | 14974075 | 14984699 | 14995322 | 15005944 | 15016565 | 15027185 | 15037803 | 15048420 |
| 942 | 15059037 | 15069652 | 15080266 | 15090879 | 15101491 | 15112101 | 15122711 | 15133319 | 15143926 | 15154533 |
| 943 | 15165138 | 15175741 | 15186344 | 15196946 | 15207546 | 15218146 | 15228744 | 15239341 | 15249937 | 15260532 |
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| 945 | 15377002 | 15387584 | 15398164 | 15408743 | 15419321 | 15429898 | 15440474 | 15451049 | 15461622 | 15472195 |
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| 948 | 15693960 | 15704508 | 15715054 | 15725600 | 15736145 | 15746688 | 15757231 | 15767772 | 15778312 | 15788851 |
| 949 | 15799389 | 15809926 | 15820462 | 15830996 | 15841530 | 15852062 | 15862594 | 15873124 | 15883653 | 15894181 |

HYPERBOLIC LOGARITHMS.

TABLE of Hyperbolic Logarithms.

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| 954 | 16324876 | 16335358 | 16345839 | 16356318 | 16366796 | 16377274 | 16387750 | 16398225 | 16408699 | 16419172 |
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| 958 | 16743287 | 16753725 | 16764162 | 16774597 | 16785032 | 16795466 | 16805898 | 16816329 | 16826760 | 16837189 |
| 959 | 16847617 | 16858044 | 16868470 | 16878895 | 16889318 | 16899741 | 16910162 | 16920583 | 16931002 | 16941421 |
| 960 | 16951838 | 16962254 | 16972669 | 16983083 | 16993496 | 17003908 | 17014318 | 17024728 | 17035136 | 17045544 |
| 961 | 17055950 | 17066356 | 17076760 | 17087163 | 17097565 | 17107966 | 17118366 | 17128764 | 17139162 | 17149559 |
| 962 | 17159954 | 17170349 | 17180742 | 17191135 | 17201526 | 17211916 | 17222305 | 17232693 | 17243080 | 17253466 |
| 963 | 17263850 | 17274234 | 17284617 | 17294998 | 17305379 | 17315758 | 17326136 | 17336513 | 17346890 | 17357265 |
| 964 | 17367639 | 17378012 | 17388384 | 17398754 | 17409124 | 17419492 | 17429860 | 17440227 | 17450592 | 17460956 |
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| 966 | 17574893 | 17585244 | 17595595 | 17605944 | 17616292 | 17626639 | 17636985 | 17647330 | 17657674 | 17668017 |
| 967 | 17678359 | 17688700 | 17699039 | 17709378 | 17719715 | 17730052 | 17740387 | 17750721 | 17761055 | 17771387 |
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| 971 | 18091156 | 18101454 | 18111751 | 18122047 | 18132342 | 18142636 | 18152929 | 18163221 | 18173512 | 18183801 |
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| 974 | 18399640 | 18409906 | 18420171 | 18430436 | 18440699 | 18450961 | 18461222 | 18471482 | 18481742 | 18491999 |
| 975 | 18502256 | 18512512 | 18522767 | 18533021 | 18543274 | 18553525 | 18563776 | 18574026 | 18584274 | 18594522 |
| 976 | 18604768 | 18615013 | 18625258 | 18635501 | 18645743 | 18655984 | 18666225 | 18676464 | 18686701 | 18696938 |
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| 978 | 18809476 | 18819700 | 18829924 | 18840146 | 18850368 | 18860588 | 18870807 | 18881025 | 18891243 | 18901459 |
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| 981 | 19115755 | 19125948 | 19136141 | 19146332 | 19156522 | 19166711 | 19176899 | 19187086 | 19197272 | 19207456 |
| 982 | 19217640 | 19227823 | 19238005 | 19248185 | 19258365 | 19268544 | 19278721 | 19288898 | 19299073 | 19309248 |
| 983 | 19319421 | 19329594 | 19339765 | 19349935 | 19360105 | 19370273 | 19380440 | 19390607 | 19400772 | 19410936 |
| 984 | 19421099 | 19431261 | 19441422 | 19451582 | 19461741 | 19471899 | 19482056 | 19492212 | 19502367 | 19512521 |
| 985 | 19522673 | 19532825 | 19542976 | 19553126 | 19563274 | 19573422 | 19583569 | 19593714 | 19603859 | 19614002 |
| 986 | 19624145 | 19634286 | 19644427 | 19654566 | 19664705 | 19674842 | 19684978 | 19695114 | 19705248 | 19715381 |
| 987 | 19725513 | 19735644 | 19745775 | 19755904 | 19766032 | 19776159 | 19786285 | 19796410 | 19806534 | 19816657 |
| 988 | 19826779 | 19836900 | 19847020 | 19857138 | 19867257 | 19877374 | 19887489 | 19897604 | 19907718 | 19917831 |
| 989 | 19927943 | 19938053 | 19948163 | 19958272 | 19968379 | 19978486 | 19988591 | 19998696 | 20008800 | 20018902 |
| 990 | 20029004 | 20039104 | 20049204 | 20059303 | 20069400 | 20079496 | 20089591 | 20099686 | 20109779 | 20119871 |
| 991 | 20129963 | 20140053 | 20150142 | 20160231 | 20170318 | 20180404 | 20190489 | 20200574 | 20210657 | 20220739 |
| 992 | 20230820 | 20240900 | 20250979 | 20261057 | 20271135 | 20281211 | 20291286 | 20301360 | 20311433 | 20321505 |
| 993 | 20331576 | 20341646 | 20351715 | 20361783 | 20371850 | 20381916 | 20391980 | 20402044 | 20412107 | 20422169 |
| 994 | 20432230 | 20442290 | 20452349 | 20462407 | 20472463 | 20482519 | 20492574 | 20502628 | 20512681 | 20522732 |
| 995 | 20532783 | 20542833 | 20552882 | 20562929 | 20572976 | 20583022 | 20593066 | 20603110 | 20613153 | 20623194 |
| 996 | 20633235 | 20643275 | 20653313 | 20663351 | 20673388 | 20683423 | 20693458 | 20703491 | 20713524 | 20723556 |
| 997 | 20733586 | 20743616 | 20753645 | 20763672 | 20773699 | 20783724 | 20793750 | 20803772 | 20813795 | 20823816 |
| 998 | 20833837 | 20843857 | 20853875 | 20863893 | 20873909 | 20883925 | 20893939 | 20903953 | 20913965 | 20923977 |
| 999 | 20933987 | 20944007 | 20954005 | 20964013 | 20974019 | 20984025 | 20994029 | 21004033 | 21014035 | 21024037 |

HYPERBOLIC Mirror. See MIRROR.

HYPERBOLIC Space, in the *Higher Geometry*, the area or space contained between the curve of the hyperbola, the asymptote, and the ordinate.

HYPERBOLICUM ACUTUM, a solid made by the revolution of the infinite area of the space contained between the curve of the hyperbola and its asymptote. This produces a solid infinitely long, and yet is demonstrated to be equal to a finite solid or body. See *Logarithmic CURVE*.

HYPERBOLIFORM FIGURES, are such curves as approach, in their properties, to the nature of the hyperbola; called also *hyperboloids*.

HYPERBOLOIDS, are hyperbolas of the higher kind, whose nature is expressed by this equation, $a y^{m+n} = b x^m (a + x)^n$. See *HYPERBOLA*.

HYPERBOLOID denotes also the hyperbolic conoid. See *CONOID*.

HYPERBOREAN, ὑπερβορεῖς, in the *Ancient Geography*. The ancients denominated those people and places Hyperborean, which were to the northward of the Scythians. They had but very little acquaintance with these Hyperborean regions; and all they tell us of them is very precarious, and much of it false.

Diodorus Siculus says, the Hyperboreans were thus called because they dwelt beyond the wind Boreas; ὑπερ signifying *above* or *beyond*; and Βορέας, *Boreas*, the north wind. This etymology is very natural and plausible, notwithstanding all that Rudbecks has said against it, who would have the word to be generally Gothic, and to signify *nobility*.

Herodotus doubts whether or not there were any such thing as Hyperborean nations: Strabo, who professed that he believed there were, does not take Hyperborean to signify *beyond Boreas*, or the north, as Herodotus understood it: the preposition ὑπερ, in this case, he supposes only to help in forming a superlative; so that hyperborean, on his principle, means no more than *most northern*: by which it appears the ancients scarcely knew themselves what the name meant by it. Strabo assigns for their habitation the country in the vicinity of the Euxine sea. Callimachus the poet places them near the Palus Mæotides. Pliny and Pomponius Mela place them behind the Rhipæan mountains, towards the icy sea. Virgil and Catullus are of the same opinion. According to Mela, Pliny, and others, they inhabited a country in which they had a day and night of six months each. Most of our modern geographers, as Hoffman, Cellarius, &c. have placed the Hyperboreans in the northern part of the European continent, among the Siberians and Samoeds: according to them the Hyperboreans of the ancients were those, in general, who lived farthest to the north. The Hyperboreans of our days are those Russians who inhabit between the Volga and the White sea. According to Clavier, the name Celtes was synonymous with that of Hyperboreans. These people, it is said, were accustomed to send the first productions of their fruits to Delos, to be consecrated to Apollo, whom they principally honoured.

HYPERCATALECTIC, ὑπερκαταλεκτικῆς, composed of ὑπερ, *over*, *beyond*, and καταλεγεῖν, *I put to the number*, *I add*; so that hypercatalectic denotes as much as *superadded*; in the *Greek* and *Latin Poetry*, is applied to verses which have one or two syllables too much; or beyond the regular measure. See *VERSE*.

The Greek and Latin verses are distinguished, with respect to their measure, into four kinds: *acatalectic* verses, where nothing is wanting at the end; *catalectic*, which want a syllable at the end; *brachycatalectic*, which want a whole foot at the end; and, lastly, *hypercatalectic*, which have one

or two syllables too many. These last are also called *hyper-meters*.

HYPERCATHARSIS, in *Medicine*, from the Greek ὑπερ, *supra*; and καθαρῖς, *I purge*, signifies an *over-purgation*, or excessive purging induced by medicine.

A hypercatharsis is said to take place, when the frequency of loose stools, after any cathartic has been administered, continues great, after the operation of the cathartic might have been expected to cease; or when the purging operation is very severe, being accompanied with a great discharge of serous or mucous fluids from the bowels, or with bloody evacuations. Such extreme purgation is most commonly occasioned by cathartics of a drastic nature; but we have seen it produced, in certain conditions of the constitution, by those of a milder quality, such as the crystals of tartar. In old and debilitated habits, violent purgatives should be employed with great caution, and only when more lenient ones appear to be altogether inadequate to accomplish the object in view; since a hypercatharsis, induced in such habits, may occasion so sudden a depression of the powers of life as may be irrecoverable. The ancients, from the paucity of their catalogue of purgative drugs, were compelled to administer the white hellebore, where an active cathartic was required; and it would appear, from the aphorisms of Hippocrates, that convulsions and death occasionally followed the hypercatharsis, which that acrid medicine produced.

The most effectual remedy for allaying the inordinate action and irritation in the bowels, in a hypercatharsis, is opium, under any form. If the strength is already considerably reduced, it may be combined with cordial and stimulant medicines, wine, and light but cordial nutriment. The absorbent and astringent substances may be advantageously united with the opiates, but are inefficacious alone; such are chalk, gum kino, the extract of log-wood, and especially the extract of catechu, which, when joined with aromatics and opium, as in the *confectio catechu* of the Edinburgh Pharmacopœia, is a very effectual soother of excessive irritation in the alimentary canal. As the irritation, thus excited, is often chiefly seated in the large intestines, the opiates may be frequently administered in mucilaginous or starch glysters with great and speedy benefit.

HYPERCHIRIA, in *Mythology*, a title of Juno, under which she was worshipped in Laconia.

HYPERCRISIS, in *Medicine*, a term used by Galen and other ancient writers to denote any immoderate critical excretion, or *super-crisis*, as it were. (See *CRISIS*.) Thus when a fever terminates by a profuse sweating or diarrhœa, the discharge being greater than the strength of the patient is able to bear, a hypercrisis was said to take place. See Galen, cap. 3. prognost.

HYPERCRITIC, compounded of ὑπερ, *supra*, and κριτικῆς, of κριτής, *judex*, of κρινω, *I judge*; an *over-rigid censor*, or *critic*; one who will let nothing pass, but animadverts severely on the slightest fault.

HYPER-DIÉZEUXIS, in *Music*, the disjunction of the two tetrachords, separated by the interval of an octave, as the tetrachord hypaton and hyperbolæon.

HYPER-DORIAN, a mode so called in Greek music, and sometimes denominated Mixo-Lydian; the fundamental or key-note of which was a fourth above the Dorian. See *MODE*.

The invention of the hyperdorian mode is ascribed to Pythoclides.

HYPERDULIA, ὑπερδουλια, composed of ὑπερ, *above*, and δουλια, *worship*, in the *Romish Theology*, is the worship rendered to the Holy Virgin.

The worship offered to saints is called *dulia*; and that to the

the Mother of God, *hyperdulia*; as being superior to the former.

HYPERICOIDES, in *Botany*. See ASCYRUM.

HYPERICUM, ὑπερικόν of Dioscorides, as appears by his description; and the *Hypericum* of Pliny. Linnæus deduces the name from ὑπερ, *above*, and εικα, *a figure or image*, which does not seem to bring us a step nearer to its meaning. Linn. Gen. 392. Schreb. 517. Willd. Sp. Pl. v. 3. 1437. Mart. Mill. Dict. v. 2. Sm Fl. Brit. 800. Juss. 255. Tourn. t. 131. Lamarck. Illustr. t. 643. Gærtn. t. 62. (Ascyrum; Tourn. t. 131. Lamarck Illustr. t. 642.) Class and order, *Polyadelphia Polyandria*. Nat. Ord. *Rotaceæ*, Linn. *Hyperica*, Juss.

Gen. Ch. *Cal.* Perianth inferior, in five deep, nearly ovate, concave, permanent segments. *Cor.* Petals five, oblong-ovate, obtuse, spreading, obliquely twisted according to the sun's motion. *Stam.* Filaments numerous, capillary, united at the base into three or five bundles; anthers small, roundish. *Pist.* Germen superior, roundish; styles three or five, sometimes one or two, simple, distant, the length of the stamens; stigmas simple. *Peric.* Capsule roundish, the number of its cells agreeing with that of the styles. *Seeds* numerous, oblong, affixed to the central column.

Ess. Ch. Calyx in five deep segments, inferior. Petals five. Filaments numerous, united by the base into three or five sets. Capsule with many seeds.

A copious and handsome genus, chiefly European, American, or Chinese, rarely tropical. Willdenow has 88 species; 11 are now known as belonging to the British Flora. The stems are either shrubby or herbaceous, usually angular. Roots perennial. Leaves simple, opposite, sessile, entire. Whole herbage generally smooth, with glandular pellucid dots, and an aromatic scent, rarely downy. Flowers terminal, cymose, yellow and brilliant. Calyx often fringed.

Common wild species are,

H. quadrangulum, Engl. Bot. t. 370. Curt. Lond. fasc. 4. t. 52, found about ditches and rivers; *perforatum*, Engl. Bot. t. 295. Curt. Lond. fasc. 1. t. 57, more abundant in dry bushy places; and *pulebrum*, Curt. Lond. fasc. t. 56. Engl. Bot. t. 1227, which forms an elegant decoration to healthy bushy ground.

H. calycinum, Curt. Mag. t. 146. Engl. Bot. t. 2017, now known to be wild near Cork, in Ireland, is a frequent ornament to shrubberies and parks, where its ample blossoms are very conspicuous.

Several shrubby American species are cultivated with us for ornament, as the *hircinum*, remarkable for its strong fox or goat-like scent.

HYPERIDES, in *Biography*, an eminent Grecian orator, the son of Glaucippus, was born at Athens, and studied under Plato and Isocrates. He cultivated the art of eloquence, became one of the most distinguished orators of his time, and acquired that sway in state affairs which popular oratorical talents never failed to obtain in the ancient democracies. He was the steady and zealous opponent of Philip of Macedon, and his zeal caused him to be made commander of a galley, in which capacity he gained much credit by his promptness and zeal in succouring the Byzantians. When Philip threatened an invasion of Eubœa, Hyperides procured a tax to be levied for the equipment of 40 galleys, and set the example by contributing one for himself and another for his son. In the time of Alexander he was possessed of the chief influence in Athens, and when that prince demanded galleys and officers from the Athenians he opposed the grant of either. His life was fully devoted to his country. He moved distinguished honours to Demosthenes his great competitor in eloquence; but when this prince of orators was

suspected of having taken a bribe from Harpalus, he was appointed to conduct the prosecution against him. Hyperides was himself accused of having acted contrary to the laws, by procuring a decree for granting citizenship to foreigners, and liberty to the slaves, whose families he caused to be transported to the Piræus, but he justified himself on the ground of state necessity, and proved that it was not he who passed the decrees, but the alarm with which Athens was seized, and the defeat of the Charœna. Hyperides continued his opposition to the Macedonian power after the death of Alexander; and when Antipater sent deputies to Athens, who made a high eulogy upon their master as the worthiest of men: "I know," replied Hyperides, "that he is a very worthy man, but we will have no master however worthy he may be." The approach of Antipater obliged Hyperides and the other leading characters to quit Athens, and he had an interview with Demosthenes, also a fugitive at Ægina. Departing thence, he was seeking for a safer place of refuge, when he was apprehended by Archias in the temple where he had taken sanctuary, and carried to Antipater at Cleonæ. He was put to the torture with the hope of obtaining from him some state secrets: to prevent this he is said to have bit off part of his tongue; but another account relates that his tongue was cut out by the tyrant as a punishment due to his silence. His body was left unburied till some of his relations secretly committed it to the funeral pile, and brought his ashes to Athens. Quintilian characterises the oratory of Hyperides as singularly sweet and acute, better adapted to little than to great causes. In the time of Photius 52 of his orations were extant. Gen. Biog.

HYPERIDROSIS, the distention of a part by water.

HYPERINESIS, of ὑπερ and νησις, *purgation*, a word used by Hippocrates for any excessive evacuation, but most frequently in the same sense as hypercatharsis, an over-purging.

HYPER-IONIAN, in *Ancient Music*, one of the Greek modes, whose fundamental was one fourth above the Ionian. It is the 12th mode ascending in the scale.

HYPERIUS, GERARD ANDREW, in *Biography*, was born at Ypres in Flanders, whence he took his surname, in the year 1511. He was sent to Paris to complete those studies which he had successfully commenced in the Flemish schools. He entered on the study of divinity, which he prosecuted with much diligence till the year 1535. During the vacations he travelled much in different countries, and after he had completed his studies at Paris he spent some time at Louvain, and then visited several other German universities. These visits into heretical countries not only prevented him from being preferred in the church, but obliged him to seek the security of his person in England, which at almost every period of her history has been more or less friendly to the votaries of freedom. He lived four years in the house of Charles lord Montjoy, who settled on him a handsome stipend, which enabled him to apply himself to the pursuits of literature. During this period he embraced the opportunities offered him of visiting the universities of Cambridge and Oxford, but, alarmed at some proceedings of Henry VIII., he returned to the continent, settled at Marburg in 1542, and was appointed to the theological chair. The duties of this office he performed with great reputation 22 years. He died in the year 1564, about the age of 53. He was author of numerous works, some of which were published by himself, and the rest were given to the world after his death. They consist of "Commentaries on the Scriptures;" "Theological Dissertations;" "Controversial Tracts;" treatises in rhetoric, logic, arithmetic, geometry, astronomy, optics, natural philosophy, &c. Hyperius, says his biographer, had

had a very clear head, and a very happy talent in conveying instruction. He was meek and polite in conversation, and delighted in social convivial intercourse. In a word, he was a man who possessed true wit and good sense, and who added to those qualities a high degree of virtue and zeal. Bayle.

HYPER-LYDIAN, in *Music*, was the most acute of the 15 Greek modes. Its fundamental was a fourth above the Lydian.

HYPERMETER, composed of $\delta\pi\epsilon\tau$, *supra*, and $\mu\epsilon\tau\rho\nu$, *measure*, in the *Ancient Poetry*, the same with hypercatalectic.

HYPEROA, a word applied by authors to the upper part, or palate of the mouth, and the basis cerebri. It properly signifies any upper place.

HYPEROCHE of *Dr. Busby*, in *Music*, (*Mus. Dict.*) is "the difference between the enharmonic and chromatic diesis," an interval, whose ratio is $\frac{2097152}{2109375} = 5 \Sigma + f$,

which is the **SEMI-COMMA maxime** of Rameau, see that article. A doubt, however, remains with us, as *Dr. B.* has quoted no author, only mentioning the ancient authors generally, nor given the ratios, whether by the term "chromatic diesis," he did not mean the least chromatic diesis of Holder, Chambers, &c. in which case his hyperoche would coincide with the hyperoche of Hensling and others below.

HYPEROCHE of *Dr. Callcott*. In perusing the additions by *Dr. Callcott* to the *Overend MS.* which we have so often quoted, we met with an interval so named, whose ratio is $\frac{16,677,181,699,666,569}{16,777,216,000,000,000} = 5 \Sigma + 2 f$, which is the **greater RESIDUAL**, see that article.

HYPEROCHE of *Hensling*, *Travers*, *Dr. Pepusch*, *Overend*, *Dr. Callcott* (*Musical Grammar*, art. 23r.), &c.

is an interval whose ratio is $\frac{3072}{3125}$, or $\frac{2^{15}3}{5^5}$, its value in *Farey's* notation being $15 \Sigma + f + m$; its common logarithm is .9925711,8968, the reciprocal of which is 74288,1032; its Euler's or binary logarithm is .024679, such being its decimal value of the octave 1: it is equal 1.37696 major commas, and to 15.157524 schismas. It is equal to the sum of the following pairs of intervals, *viz.* a diaschisma and a medius residual, a major comma and a semi-comma major of Rameau, a minor comma and a semi-comma maxime of Rameau, a dieze minime and a schisma, a prisma and five schismas, &c. It results, as the difference between the following pairs of intervals, *viz.* a semitone minor and an enharmonic diesis, an enharmonic diesis and a major residual, a semitone subminime and a minor comma, a major semitone and two enharmonic dieses, a chromatic diesis and a major comma, two semitones minor and a semitone major, two minor tones and three major semitones, three minor semitones and a minor tone, &c. The following three intervals also compose it by addition, *viz.* a schisma, a minor residual and a diaschisma, a schisma, a medius residual, and a major comma, &c.

If three major thirds be turned upwards, and two minor thirds and a fourth downwards, each true and without any beats on an instrument having sufficient strings, this interval will result; which, in the additions to the *Overend MS.* by *Dr. Callcott*, is designated by the Greek small p or pi .

HYPEROCHE of *Ptolemy*, is an interval whose ratio is $\frac{128}{129}$, or $\frac{2^7}{3 \cdot 43}$, or 6.88806 $\Sigma + m$, and therefore not in the diatonic scale: its common logarithm is .9966202,5935, and its Euler's log = .01122725, and it is equal to .6264543 major commas. It cannot, of course, be tuned by any combinations of perfect concords, though it readily

may by calculating the BEATS which it makes. See that article.

HYPERO-PHARYNGÆI, in *Anatomy*, a name given by *M. Santorini* to the perystaphylo-pharyngæi muscles.

HYPEROSTOSIS, from $\delta\pi\epsilon\rho$ upon, and $\delta\sigma\tau\epsilon\omega$, a bone, in *Surgery*, any hard indolent swelling upon a bone. See EXOSTOSIS.

HYPER-OXYMURIATES. See the following article.

HYPER-OXYMURIATIC ACID, in *Chemistry*. This acid contains a greater proportion of oxygen than the oxymuriatic acid, and on that account has received its name. It may be procured in combination with potash in the following process: if a quantity of potash, with six times its weight of water, be put into one of the bottles of *Woulfe's apparatus*, and a stream of oxymuriatic acid gas be passed through it till the potash is saturated, crystals in the form of fine white scales fall to the bottom; these are crystals of hyper-oxymuriatic of potash, being a compound of potash and hyper-oxymuriatic acid. This acid is chiefly known in its saline combinations. These are named *hyper-oxymuriates*, and from the peculiarity of their chemical composition—the large quantity of condensed oxygen existing in them, and retained by no very strong attraction, their characters are extremely distinctive. The principal are these, they afford very pure oxygen when exposed to a red heat, detonating with great violence with inflammable bodies, either on the application of heat, or by mere percussion or trituration, and causing those bodies to burn when sulphuric or nitric acid is added to the mixture of the salt and the inflammable matter. Their taste is cool and penetrating; they are generally soluble in water, and crystallizable: the greater number of them are also soluble in alcohol. They do not precipitate any of the metallic salts; nor destroy the vegetable colours, but in small quantities they heighten them. The hyper-oxymuriatic acid contains

| | | | |
|---------------|---|---|-----------|
| Oxygen | - | - | 65 parts. |
| Muriatic acid | - | - | 35 |
| | | | 100 |

The order of the affinities of the hyper-oxymuriatic acid is the following:

| | |
|-------------|-----------|
| Potash, | Lime, |
| Soda, | Ammonia, |
| Barytes, | Magnesia, |
| Strontites, | Alumine. |

From the hyper-oxymuriates of potash, oxygen-gas can be obtained in the greatest purity; but the most astonishing of its properties are those which it exhibits when mixed with combustibles. All combustible substances are capable of decomposing it, and in general the decomposition is attended with violent detonations. When three parts of this salt and one of sulphur are triturated in a mortar, the mixture detonates violently: the same effect is produced when the mixture is placed upon an anvil, and struck smartly with a hammer. It sometimes detonates spontaneously without any perceptible friction. Charcoal produces the same effect, though not so violent. This property led *Berthollet* to propose it as a substitute for nitre in the preparation of gunpowder. The attempt was made in 1788, but as soon as the workmen began to triturate the mixture of charcoal, sulphur, and the hyper-oxymuriate of potash, it exploded with violence, and proved fatal to two of the experimenters. Phosphorus detonates with this salt either by trituration or percussion, but

The quantities used should not be more than half a grain each, or there will be danger in the experiment. When this salt is triturated in a mortar with a little cotton cloth, small repeated explosions are heard similar to the crack of a whip, and if the cotton be dry and warm it sometimes takes fire. When nitric acid is poured upon a mixture of oxymuriate of potash and phosphorus, flakes of fire are emitted at intervals for a considerable time. The theory of these explosions is this. The oxygen of the acid combines with the combustible, and at the same time lets go a quantity of caloric: and trituration or percussion acts merely by bringing the particles which combine within the sphere of each other's attraction. The constituents of the oxymuriate of potash are

58.3 Acid,
39.2 Potash,
2.5 Water.

It is prepared by dissolving one part of carbonate of potash in six parts of water, and saturating the potash with oxymuriatic acid gas. When the saturation is nearly completed the oxymuriate falls down in crystals. It is purified by solution in boiling water: as the water cools, the pure hyperoxymuriate crystallizes. The crystals are to be dried between the folds of blotting paper. Hyperoxymuriate of soda may be prepared by the same process as hyperoxymuriate of potash; it crystallizes in cubes, and it produces a sensation of cold in the mouth. The other hyperoxymuriates that have been examined are those of ammonia, magnesia, lime, barytes, and strontian. See MURIATIC Acid, in which article an account of Dr. Davy's experiments on it, with a view to its decomposition, and the results will be given.

HYPER PHRYGIAN, in *Ancient Music*, called by Euclid hypermixolydian, was the most acute of the thirteen modes of Aristoxenus.

HYPERSARCOMA, or **HYPERSARCO'SIS**, from *ὑπερ*, and *σάρξ*, *flesh*, a fleshy excrescence; fungous granulations; proud flesh.

HYPERTHYRON, formed of *ὑπερ*, *over*, and *θυρον*, *gate*, in the *Ancient Architecture*, a sort of table used after the manner of a frieze, over the jambs of Doric doors and gates, and the lintels of windows. It lies immediately under the corona; and is, by our workmen, usually called the *king-piece*.

HYPETHRE, two rows of pillars surrounding, and ten at each face of any temple, &c. with a peristyle within of six columns. See **HYPETHROS**.

HYPHESIS, or **HUPHESIS**, in *Ancient Geography*, a river of India, called anciently by the natives *Beypashia*; now the *Bejab*; which see.

HYPHEN, *ῥυφήν*, in *Grammar*, an accent or character, which implies, that two words are to be joined, or connected into one compound word—As, *male-administration*, &c.

Hyphens serve also to connect the syllables of such words as are divided by the end of the line.

HYPHIALTES, **EPHIALTES**, in *Mythology*, names given by the Greeks to certain rural divinities answering to the Incubi of the Romans.

HYPHYDRA, in *Botany*, derived from *ὑπο*, *under*, and *ὑδρ*, *water*, because, as Aublet informs us, it is always found growing three or four feet under the surface.—Schreb. 666. Willd. Sp. Pl. v. 4. 629. Vahl. Symb. v. 3. 99. (Tonina; Aubl. Guian. 856. Juss. 443.) Class and order, *Monocia Gynandria*. Nat. Ord. *Plantæ incerte sedis*, Juss.

Gen. Ch. Male, Cal. Perianth of one leaf, deeply divided into three, obovate, concave, smooth lobes incurved at the top. Cor. none. Stam. Filaments six, capillary, long, inserted, at the angles, above the germs; anthers roundish.

Pist. Germen empty, inflated, membranous, hexagonal, truncated at the top; style capillary, the length of the stamens; stigma none.—Female, Cal. Cor. and Stam. none. *Pist.* Germen roundish, with three furrows; style triangular; stigmas three, acute. *Peric.* Capsule membranous, of one cell, and three valves. Seed solitary, ovate, streaked.

Ess. Ch. Male, Calyx three-cleft. Corolla none. Stamens six. Female, Calyx none. Corolla none. Style single. Stigmas three. Capsule of three valves, single-seeded.

1. *H. amplexicaulis*. (Tonina fluviatilis; Aubl. Guian. 857. t. 330.—Eriocaulon amplexicaule; Rottb. Surinam. 4. t. 1. f. 1.)—An inhabitant of waters at Guiana and Cayenne, flowering and bearing fruit in February. This herb puts forth many branching, scattered, erect or decumbent little stems, furnished with capillary radicles. Leaves alternate, smooth, narrow, lanceolate, acute, fringed longitudinally with reddish bristles, sessile, embracing the stem. Flowers capitate, axillary, on solitary footstalks.

HYPNOTIC, *ὑπνωτικός*, derived from *ὑπνο*, *sleep*, in *Medicine*, a remedy which promotes or induces sleep; called also *soporific* and *opiate*. See also **NARCOTICS**.

HYPNOTICUS SERPENS, the *sleep-snake*, in *Zoology*, the name of an East Indian species of serpent, called by the Ceylones *nintipolong*, a word importing the same sense. It is of a deep blackish brown, variegated with spots of white, and is a very fatal kind in its poison, its bite always bringing on a sleep which ends in death.

HYPNUM, in *Botany*, an ancient name for some kind of moss, formerly used in medicine. The word is supposed by Dillenius, who first adopted it for the particular genus to which it is now applied, to originate from *ὑπνος*, *sleep*; and he justifies its application on the principle of fragrant substances, like these mosses, producing sleep. Dill. Musc. 261. Linn. Gen. 564. Schreb. 762. Hedw. Fund. v. 2. 94. Sm. Fl. Brit. 1276. Juss. 11. Lamarck Illustr. t. 874. (Leskea; Schreb. 762. Hedw. Fund. v. 2. 93. t. 10. f. 62—65.)—Class and order, *Cryptogamia Musci*. Nat. Ord. *Musci*.

Ess. Ch. Capsule ovate-oblong, from a lateral scaly sheath. Outer fringe of sixteen teeth, dilated at the base; inner a variously-toothed membrane; veil smooth.

This vast and beautiful genus differs from *Bryum*; (see that article), in no other essential character than the lateral, not terminal, situation of its female flowers. The habit, however, is widely different. *Hypnum* has usually a lax, spreading, repeatedly branched stem, whence its English name of Feather-moss, cloathing the ground to a wide extent, and being of larger dimensions than most others of this family. The species in the *Flora Britannica* are 77, and a few others have been found since that work came out. The *Species Muscorum* of Hedwig defines 83 *Hypna*, besides 35 species of *Leskea*, or *Leskia*, a genus comprehended under *Hypnum* in Flor. Brit. Yet these, making together 118, form but an inadequate catalogue of the known species, and some of them are reducible to other genera, *H. Smithii* of Dickson and Hedwig being a *Pterogonium*; and others belonging to *Hookeria*. The difference on which Hedwig founds the distinction between *Hypnum* and *Leskea* consists in the inner fringe, the teeth of which in the latter are equal and uniform, usually 16 in number, while in the former there are 16 broad teeth, with single or double intermediate ones. This distinction, however, proves not only extremely difficult to discern, but totally unnatural as to the species it brings together or separates, and by no means certain or constant in each.—See **FRINGE of MOSSES**.

Hypnum is distributed into several sections.

1. Capsules erect. Shoots cylindrical.

Of this *H. pulchellum*, Engl. Bot. t. 2006, and *sericeum*, t. 1445, the latter very common on walls, roofs, banks, and trees, may serve for examples.

2. Capsules erect. Shoots compressed, the leaves being disposed in two ranks.

The only two British species here are *complanatum*, Engl. Bot. t. 1492, and *trichomanoides*, t. 1493.

3. Capsules drooping or curved. Shoots compressed, the leaves in two ranks.

Such are *denticulatum*, t. 1260; *crenulatum*, t. 1261; *serulatum*, t. 1262; and the common *riparium*, t. 2060. But *lucens* no longer remains here, being now called *Hookeria lucens*, (see *HOOKERIA*;) and there is much reason to believe the beautiful *undulatum* ought also to make one of a new genus, marked by its furrowed capsule.

4. Capsules drooping or curved. Shoots compressed. Leaves imbricated every way.

A handsome tribe, see *splendens*, Engl. Bot. t. 1424; *proliferum*, t. 1494. Curt. Lond. fasc. 1. t. 72, very common in woods, but rarely in fruit; and *pralongum*, t. 2035, also very frequent.

5. Capsules drooping or curved. Shoots cylindrical. Leaves imbricated every way.

A rather numerous section, in which we find *Alopecurum*, Engl. Bot. t. 1182, a native of shady moist rocks; *serpens*, t. 1037, very common, known by its white veil; *lutescens*, t. 1301; and the beautiful though vulgar *parum*, t. 1599.

6. Capsules drooping or curved. Leaves squarrose.

The sharp prominent leaves, projecting on all sides of the branches, give the peculiar character of this very distinct section, as in *fluitans*, t. 1448; *friatum*, t. 1648; *stellatum*, t. 1302; and the great well-known *triquetrum*, t. 1622.

7. Capsules drooping or curved. Leaves curled.

In this elegant section are *rugosum*, t. 2250; *scorpioides*, t. 1039, the figure done from too young a specimen, but otherwise correct; *cupressiforme*, t. 1860; *molluscum*, t. 1327, and a near relation of the last, though much finer, the true *H. Christa castrensis*, t. 2108, recently discovered in Scotland by Mr. G. Don.

HYPO, ὑπο, a Greek particle retained in the composition of divers words borrowed from that language; literally denoting *under*, *beneath*.—In which sense it stands opposed to ὑπερ, *supra*, *above*.

HYPO-ÆOLIAN, a mode in the *Ancient Music*, called also by Euclid the grave hypo-lydian. This mode has its fundamental a fourth below the Æolian.

HYPOBOLE, from ὑπο, and βαλλω, *I cast*, or *Subjection*, in *Rhetoric*, a figure, so called, when several things are mentioned, that seem to make for the contrary side, and each of them refuted in order. This figure, when complete, consists of three parts; a proposition, an enumeration of particulars with their answer, and a conclusion. Thus Cicero, upon his return from banishment, vindicates his conduct in withdrawing so quietly and not opposing the faction that ejected him. Pro. Dom. cap. 35.

HYPOCATHARSIS, ὑποκαθαρσις, compounded of ὑπο, *under*, and καθαρω, *I purge*, in *Medicine*, a too faint or feeble purgation.

HYPOCAUSTUM, ὑποκαυστοί, formed of the preposition ὑπο, *under*, and the verb καίω, *I burn*, among the Greeks and Romans, was a subterraneous place, wherein was a furnace that served to heat the baths.—Vitruvius calls it *caldarium*.

The ancients had properly two sorts of hypocausta; the one called by Cicero *vaporarium*, and by others *laconicum*, or *sudatio*; which was a large sweating bath, in which were

three brazen vessels called *caldarium*, *tepidarium*, and *frigidarium*, according to the water contained therein.

The other hypocaustum was a sort of *fornax*, or oven, to heat their winter parlours, or *cenatiuncule hybernae*.

The latter hypocaustum was called *alveus* and *fornax*; and the man that tended the fire, *fornacator*. See **BATHS**.

The remains of a Roman hypocaustum, or sweating-room, were discovered under ground at Lincoln, in 1739. We have an account of these remains in the Phil. Trans. N^o 401. sect. 29. See Abr. vol. ix. p. 455.

HYPOCAUSTUM, among the moderns is that part or place where the fire is kept that warms a stove, or hot-house.

HYPOCHÆRIS, in *Botany*, ὑποχæρις, an ancient name of uncertain derivation. Linn. Gen. 405. Schreb. 533. Willd. Sp. Pl. v. 3. 1620. Mart. Mill. Dict. v. 2. Sm. Fl. Brit. 840. Juss. 170. Lamarck Illustr. t. 656. Gærtner. t. 160. Class and order, *Syngenesia Polygamia æqualis*. Nat. Ord. *Compositæ Semisfculosæ*, Linn. *Cichoracæ*, Juss.

Gen. Ch. *Common Calyx* roundish, imbricated, swelling at the base; the scales lanceolate, acute. *Cor.* compound, uniform, imbricated, the florets hermaphrodite, equal, numerous, each with one ligulate, linear, abrupt, five-toothed petal. *Stam.* Filaments five, capillary, very short; anthers united into a cylindrical tube. *Pist.* Germen ovate; style thread-shaped, the length of the stamens; stigmas two, reflexed. *Peric.* none, except the closed calyx, assuming a globose pointed shape. *Seeds* foliary, oblong. *Down* feathery, stalked. *Recept.* clothed with linear-lanceolate scales, the length of the seeds.

Ess. Ch. Receptacle chaffy. Calyx somewhat imbricated. Down feathery.

Obs. Haller, Reichard, and others have remarked, that in *H. glabra* the seeds of the circumference have sessile down. See Fl. Brit. 842.

Five species of *Hypochæris* are defined by Willdenow, some Linnæan ones being removed to *Seriola*. Three are natives of England; the *maculata*, Engl. Bot. t. 225, found in chalky open pastures, but rarely; *glabra*, t. 575. Curt. Lond. fasc. 3. t. 53, a native of gravelly fields, sometimes found among turnips in Norfolk, in which case it is very luxuriant; and *radicata*, Curt. Lond. fasc. 3. t. 52. Engl. Bot. t. 831, a very common weed.

The first is perennial, with a nearly solitary, rather large, yellow flower, and toothed, rough leaves spotted with black. The second is annual, smooth, with several small, pale, yellow flowers, expanding in the morning only. The third is perennial, with rough runcinate leaves, a smooth branching stem, and large flowers of a full yellow.

The other two species in Willdenow are,

1. *H. helvetica*, Jacq. Ic. Rar. t. 165, a large and handsome plant, confounded by Linnæus with his *maculata*, from which its narrower, lanceolate, unspotted leaves, perfectly simple stem swelling upward, and very large flower distinguish it. This species, found on the Alps, is delineated by Haller, Allioni, and Villars, being a favourite with alpine botanists.

2. *H. minima*, Desfont. Atlant. v. 2. 238. (*H. hispida*; Roth. Catal. v. 1. 100.) Native of Barbary, resembling *H. glabra*, but scarcely half its size, with roughish leaves and a bristly calyx.

HYPOCHEOMENOS, a person afflicted with a catact, or opacity of the crystalline lens of the eye. The term is derived from ὑποχæρις, *to suffuse*.

HYPOCHONDRIA, in *Anatomy*, from ὑπο, *under*, and χονδρος, *cartilage*, those parts of the cavity of the abdomen which are covered by the inferior ribs and their cartilages:

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cartilages: they are distinguished by the epithets right and left. See ABDOMEN.

HYPOCHONDRIASIS, in *Medicine*, a disorder principally characterized by an anxious and apprehensive state of mind in respect to the patient's health, and by an imaginary suffering of many morbid affections, together with a deranged state of the digestive organs.

This complaint has been known from ancient times, and has received a great variety of appellations, many of which have been derived from hypothetical views of its nature. The term *hypochondriasis*, or *hypochondriac disease*, is taken from *hypochondrium*, ὑποχόνδριον, which signifies literally *under the cartilage*, and is the name given by anatomists to the upper and lateral regions of the belly which lie under the cartilages of the false ribs. This appellation was probably given to the disease in question, in consequence of the general uneasy sensations which are experienced by hypochondriacs in these parts of the body, especially on the left side; as well as from the opinion of physicians, that the seat of these sensations, and of the disease itself, is always in some of the organs which lie in the hypochondria, and which are the stomach and spleen on the left side, and the liver on the right. The Arabians denominated the disease *Mirachia*, the word *Mirach*, in their language, signifying the abdomen or belly. The opinion, which was for a long time prevalent, that the spleen was principally the seat of the disorder, gave occasion to the use of the name of that viscus to denote the malady. And another supposition, that the disordered state of the mind was excited by vapours, arising from a collection of fæulent and offensive matter accumulated in the spleen and first passages, gave rise to the denomination of *vapours*, by which the malady has also been designated. The French call hypochondriacal persons, *malades imaginaires*, from the various imaginary evils of which they complain. The term *hyp* and *hypo*, familiarly used in this country, are obviously contractions of the Greek name.

It would be impossible to give a regular history of all the symptoms of a disease, which is ever varying and irregular in its phenomena, and includes, in different instances, almost all the painful sensations and signs of disordered functions, that are witnessed in the various complaints incident to the human frame. We must content ourselves, therefore, with delineating the peculiar features of the disorder, and enumerating some of the most remarkable circumstances that have been observed to accompany it. We might say, in a few words, that, after a series of symptoms, evincing a deranged state of the bodily health in general, but especially of the organs of digestion, which have continued for an indefinite length of time, a state of mind gradually shews itself, which is distinguished by the following circumstances; languor, listlessness, or want of resolution and activity with respect to all undertakings: a lowness of spirits, sadness, and timidity; and with respect to all future events, a dread and apprehension of the worst, or most unhappy occurrences, often upon the slightest grounds. But this apprehension is particularly directed to the state of the patient's health; he attends minutely to every change of sensation, and from every unusual feeling, though of the slightest kind, anticipates great danger, and even death itself. He supposes himself, at different times, as these sensations vary, afflicted with every disorder in succession that he has either seen, heard, or read of: and, in respect to all these feelings and apprehensions, he commonly entertains the most obstinate persuasion and belief, and is even disobliged by any person, who shall intimate that he looks well. He is fond of complaining; and tiresome in describing his maladies: never satiated with

medicines, yet constantly anxious to fly from remedy to remedy; and equally desirous of medical counsel, yet soon dissatisfied with every physician. As the disease advances, he is afflicted with most unaccountable sensations and affections, which can be only referred to his imagination.

Such, in brief, is the character of hypochondriasis. This state of mind, however, as we have just stated, is ushered in and accompanied by various symptoms of corporeal disease, which are principally referable to a disordered condition of the digestive organs, with which other organs also suffer in sympathy. Thus the person is troubled for a considerable time with flatulency, and a sense of heat and pain along the course of the œsophagus and the pit of the stomach, called heart-burn, sometimes attended with acidity and sometimes with a feeling of oiliness and rancidity, especially when eructation takes place. The air, which is evolved in the stomach, produces great distention of that organ, and this distention is always accompanied with an uneasy feeling and sense of anxiety: this wind afterwards descends into the bowels, producing croaking and rumbling noises, called *borborismi*, and exciting pricking pains, "snatchings, thumpings, and pulsations in the belly," as Maudeville describes them, which consist of slight convulsive motions of the abdominal muscles. The appetite is frequently bad, but in some cases craving, and is generally irregular in the beginning, as well as the alvine discharge. As the disorder advances the patient is generally very colicive, discharging black hardened excrement, with much pain and straining. At this time the bowels are moved with difficulty, and require strong cathartics to produce any effect: hæmorrhoids or piles, especially internal ones, accompanied with great pain, and not unfrequently with bleeding, are liable to occur. Sometimes a diarrhœa suddenly comes on; but so far from giving relief, it rather exhausts the strength of the patient, and leaves him low and dejected.

While these symptoms of indigestion prevail, others, which appear to be the direct or indirect consequence of them, are often very troublesome. There is often a weight, oppression, or tightness felt about the præcordia, with palpitations of the heart: the face is frequently flushed, and flying heats are felt even over the whole body: the head often aches, and the eyes are dim. The urine is various: it is often of a wheyish, or milky white appearance, which always announces a great weakness and disorder in the chylopoetic viscera: at other times a pale and limpid urine is passed in large quantities, especially after any agitation of mind, or hurry of spirits. Cold sweats, which alternate with flushes of heat, fainting, giddiness, deafness, ringing in the ears, and disturbed and unrefreshing sleeps, from which the patient wakes in fright, are common symptoms in the advanced stages of the disorder. The whole nervous system is deranged. The patient generally feels a much more oppressive sensation of weakness and fatigue than is natural, considering the muscular strength which he is capable of exerting. Slight symptoms of debility, which in another person would hardly produce any disagreeable effect, for instance, sudden distention of the stomach, slight palpitation, or colic, instantly occasion all the alarming feelings of fear and apprehension, and these are accompanied with a degree of anxiety which cannot be described.

But the hypochondriac has many painful feelings in parts where no disease apparently exists, and many diseased perceptions which command his belief, and greatly add to the sum of his misery. A number of those distressing feelings are often external pains, seated immediately under the skin, and in parts which, when examined, appear to be in a sound

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state. Sometimes the pain is seated in the middle of one or two of the ribs; sometimes in the middle of the leg, thigh, or arm; sometimes in the back, and in various parts of the scalp. That these painful feelings are generally transmitted from impressions in the stomach and bowels, appears from this; that they are most frequent, when the patient is troubled with indigestion, flatulency, colicness, or colic: what is very remarkable, the external pain is often increased by pressure. Dr. Crichton mentions the case of a gentleman who suffered exceedingly from these false pains. If the finger was pressed upon the pained part, it generally excited spasms in the organs of respiration, and occasioned so much agony, as to make him scream aloud; after the pressure was removed, the pain ceased. These pains were constantly shifting their place, and often wandered over half the patient's body in the course of the day. Dr. Whytt, after enumerating many facts, concludes, "that faintings, tremors, palpitations of the heart, convulsive motions, and great fearfulness, may be often owing more to the infirm state of the first passages, than to any fault either in the brain or heart:" and he farther remarks, in regard to himself, "When my stomach and bowels have been out of order, and affected with an uneasy sensation from wind, I have not only been sensible of a general debility and flatness of spirits, but the unexpected opening of a door, or any such trifling unforeseen accident, has instantly occasioned an odd-sensation about my heart, extending itself from thence to my head and arms, and, in a lesser degree, to the inferior parts of my body. At other times, when my stomach is in a firmer state, I have no such feelings, or at least in a very small degree, from causes which might be thought more apt to produce them." Whytt on Nervous Disorders, chap. iii.

When the disagreeable feelings, dejection of spirits, and unremitting anxiety and attention to their health and to every new sensation, have continued for an indefinite time, which is longer or shorter, according to a variety of circumstances, diseased perceptions suddenly arise, which claim the belief of hypochondriacs. It would be vain to attempt an enumeration of all the extravagant ideas which enter into the minds of such people, since they are infinitely various. Some think that their extremities and posteriors are made of glass: others that their legs are as soft as wax; some think they have no heart, others that they have no soul; others fancy that they are dead, and others that they are changed to monsters, &c. In others, the disorder verges upon melancholy, and ideal pains of poverty, persecution of enemies, secret vengeance, and calumny, haunt them perpetually: but in this case, the disease may be considered as having passed the limits of hypochondriasis, and put on the character of insanity. When hypochondriasis arises from diseased viscera, the erroneous ideas, which present themselves to the mind of the patients, generally concern their own frame. It is not very easy to trace these erroneous perceptions to the original painful, yet obscure sensations in the body, to which they owe their existence. It is only, indeed, by a long continuance of these sensations, that they become associated with the strange notions of hypochondriacism. "Nothing can be more interesting," Dr. Crichton remarks, "to a physician who is endowed with only a moderate share of the spirit of observation, than the progress of this complaint in a number of patients, especially in regard to its effects on the mind. They always struggle more or less in the beginning, with the lowness and dejection which affect them; and it is not until many a severe contest has taken place between their natural good sense, and the involuntary suggestions which arise from the obscure and painful feelings of

their diseased nerves, that a firm belief in the reality of such thoughts gains a full conquest over their judgment. A firm belief in any perception never takes place until it has acquired a certain degree of force; and as all impressions which arise from the viscera of the abdomen are naturally obscure, we see the reason why these must continue for a great length of time, or be often repeated before they can draw a person's attention from the ordinary impressions of external objects, which are clear and distinct, and before they acquire such a degree of vividness as to destroy the operations of reason." An Inquiry into the Nature and Origin of Mental Derangement, &c. vol. i. p. 202.

Dr. Crichton thus attempts to explain the fact, that the source of the mental illusion generally lies in the abdomen. "Most of the objects which surround us have been examined by several of our senses; we have compared the various sensations they have yielded, and these, therefore, become associated in our minds; so that if any external body, thus examined, be again presented to only one of our senses, the idea of all its various qualities is recalled, and we necessarily believe in their reality. The sources of almost all our perceptions, while we are in health, lie in external objects: for the nerves of the external senses are the only ones of our whole frame which convey clear impressions to the intellectual part. Hence we acquire a natural habit of ascribing all strong impressions to some external cause. In cases, therefore, where the cause of the sensation cannot be examined, a false judgment may easily arise. The languor and pain and various uneasy sensations, which a hypochondriac feels, naturally withdraw his attention from surrounding objects; and as the exercise of his judgment is weakened by the same circumstances, he does not examine the unreasonable ideas with accuracy, when they are first presented to his mind. Painful feelings are associated with melancholy thoughts; and new and uncommon feelings, upon the same principle, are ascribed to strange and uncommon causes. The weakness, therefore, which a hypochondriac feels in his limbs, makes him imagine they are unable to support him; but if they cannot do so, he concludes they must bend or break; the idea of fragility, or flexibility, however, is often derived from such substances as wax and glass, and lie therefore believes that his limbs are made of some kind of similar materials." Loc. cit. p. 208.

In a word, these singular notions of the hypochondriac may be considered as arising from a long recurrence of novel and distressing sensations, connected with a morbid state of the nervous system in general, and of the mind or spirits in particular, which absorb the attention of the individual to the exclusion of common impressions: and as the perturbed and agitated mind converts every obscure impression on the sight, for instance, into visions of horrible form; of the reality of which, if the impressions continue, it conceives a firm belief; so these unusual sensations in the interior of the body become the ground-work of false and extravagant perceptions.

There is no difficulty in accounting for the ordinary suppositions of hypochondriacs, that they are affected with certain dangerous or loathsome diseases; when it is recollected, that scarcely any organ or portion of the body altogether escapes being the seat of some uneasiness or irregularity of function, which, in the watchful anxiety of the patient's mind, and his disposition to despondency, at once becomes the object of his attention and evil forebodings. Like *hysteria* in the female, this disease assumes the form, and mimics the symptoms, of almost all other diseases. When palpitations of the heart occur, with intermissions of the pulse, tightness in the chest, pulsation in the abdomen, &c. from over-distention of the stomach by food or flatulency, the hypochondriac

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hypochondriac immediately supposes that hydrothorax, dropsy of the pericardium, aneurism of the heart or of the great artery, angina pectoris, or some such formidable disease, with which his reading or enquiries have made him acquainted, is already his lot. If, from sympathy with the same organs, the head is affected with giddiness, or pain, the eyes occasionally dim, the vision double, or otherwise incorrect, the ears affected with a ringing noise, &c. the notion of some disease fixed in the brain immediately occurs, which is at one time supposed to be hydrocephalus, at another an abscess in the brain, or some morbid adhesion among the membranes, &c. And in like manner, every other organ of the body is in its turn believed to be the seat of some fatal and irremediable malady.

While this general disturbed state of the sensations continues, the sleep is commonly imperfect and interrupted, and every variety of distressing dreams is excited; so that the patients frequently awake suddenly, with starting and in great terror, supposing themselves haunted by all sorts of monsters and visions which imagination can suggest, and suffering much from those oppressive feelings, which are comprehended under the denomination of *incubus* or *night-mare*. It is not difficult to conceive, that some of the fancies, entertained by hypochondriacs, may have originated in these dreams, and become rivetted by repetition, from the recurrence of the peculiar sensations which called forth the trains of ideas. See DREAMS.

It would be superfluous to attempt to illustrate all the various absurd notions which hypochondriacs have in different instances entertained, and the strange resolutions which they have formed in consequence; many examples of them are detailed by writers on mental derangement, of which one or two may suffice. Tulpus relates, that a painter of considerable reputation imagined that all his bones were become so soft and pliant, that they must necessarily bend like wax, if he attempted to walk, or if any hard body was struck against them. In conformity with the fears which such a notion inspired, he kept his bed during the whole winter, imagining that if he arose, his legs would be compressed by his own weight into a lump like clay or wax. (See his *Obs. Med. lib. i. cap. 18.*) Marcus Donatus has stated, that a baker of Ferrara believed he was made of butter, and on that account would not approach the oven, lest he should melt. (*Hist. Med. Rar. lib. ii. cap. 1.*) The same author has recorded the case of a person, of the name of Vincentinus, who believed that he was of such an enormous size, that he could not go through the door of his apartment. His physician gave orders that he should be forcibly led through it, which was done accordingly, but not without a fatal effect; for Vincentinus cried out, as he was forced along, that the flesh was torn from his bones, and that his limbs were broken off, of which terrible impression he died in a few days, accusing those who conducted him of being his murderers. (*ibid.*) Dr. Darwin had witnessed twice an imaginary itch, and twice an imaginary diabetes, when there was not the least vestige of either of those diseases, and once an imaginary deafness, where the patient heard perfectly well; and an imaginary venereal disease, when they have only deserved it, is a very common hallucination among modest young men. See *Zoonomia*, vol. ii. class iii. 1. 2.

Although a great majority of hypochondriacal complaints, especially of the slighter kind, even when they have continued for a considerable time, do not lead to any serious result; yet there are many instances in which the actual state of corporeal disease is ultimately demonstrated, by the termination of the symptoms in dangerous and fatal maladies; such as apoplexy, palsy, jaundice, dropsy, tympany, and

pulmonary consumption; not to mention the more complete diseases of the intellect, confirmed mania, melancholy, and fatuity, in which they occasionally end. For although the morbid condition of the abdominal viscera may be but slight in the first instance, and will yield to the regimen adopted for its removal; yet diseased vascular action, when long continued, whether idiopathic or sympathetic, frequently leads to morbid structure, to great congestions, and to slow inflammation, with adhesions, effusions of lymph and serum, &c. which are the consequences of the latter. See Whytt on Nervous Disorders, chap. vi.

Causes of Hypochondriasis.—Some persons are obviously much more liable to hypochondriacal affections than others; and this *predisposition* to the disease appears to consist in a peculiarity of constitution of the nervous system, and of the digestive organs. This constitution is not always to be distinguished by external character; but it belongs more particularly to the male sex, to the advanced periods of life, and to the melancholic temperament: it is commonly original, or distinguishes the individual from his birth; and is often hereditary, having existed in his progenitors; but it may be brought on by disease, by improper aliment, and certain modes of life. The disease, however, occasionally takes place in persons of the sanguineous temperament, as we shall state immediately. With respect to the constitution of the digestive organs, it is remarked by Dr. Whytt and Dr. Crichton, that this does not consist solely in debility; since we sometimes see the appetite good, and digestion well performed, on the one hand, and, on the other, we often meet with indigestion and disordered states of the stomach and bowels, in persons who have never suffered any hypochondriasis. It is to be considered, therefore, as a peculiar sensibility of the nerves of these parts, which are readily put into an unnatural or depraved state of feeling.

The *exciting causes* are such circumstances as tend to augment or produce this derangement of the chylopoetic viscera, and of the general state of the nervous power. Among these we may enumerate great watching; excessive fatigue; anxious pursuit of business; a sedentary life; intense application to study; excess in venery; all the depressing passions, however produced, as grief, anxiety, and fear; general repletion in respect to food, or the use of improper diet; intermitting and remitting fevers. To these most writers on the subject have added, the prevalence of a gouty humour, or the existence of atonic, misplaced or retrocedent gout; the recession of certain cutaneous eruptions; and the retention and suppression of accustomed evacuations, as the catamenia and hemorrhoids.

The former of these causes invariably influence the digestive organs, destroy the appetite for food, and render the stomach incapable of converting that which is taken into nutriment; hence the load and oppression after eating, the torpor, sleeplessness, &c. which ensue. At the same time an extreme mobility of the nervous system is induced, especially by exhaustion, from watching, hard study, or any other continued and anxious pursuit, or where there is any severe depressing emotion of mind. These causes, therefore, at once give rise to that disturbed state of the nervous system which takes the alarm at every disagreeable or unusual sensation, and to that derangement of the organs of digestion, which, from their peculiar and universal sympathy with every other part of the body, tends to multiply those morbid sensations. Hoffmann remarks, that intense study operates in an additional way, in consequence of the posture of the student; who, in leaning forwards immediately after the stomach is distended with food, necessarily occasions a pressure upon the viscera of the abdomen, and especially upon the meseraic veins;

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veins; whence the circulation through the liver is impeded, and consequently congestion must take place in the various organs of that cavity. (Syst. Med. Ration. tom. 1. lib. ii. cap. 10.) This disease, therefore, has been observed to be particularly frequent in literary men. These congestions have, in fact, been found to exist in such cases. Dr. Whytt says, "in the bodies of those who have died of the hypochondriac disease, the meseraic and other veins which meet to form the *vena portarum* (the great vessel which supplies the liver), have been often found greatly distended with blood. But," he adds, "this distension of those veins, if any thing preternatural, was probably only a consequence of some obstruction of the liver, and not to be reckoned, as it has been by some authors, the cause of that distemper." (Loc. cit. chap. 5.) Obstruction by direct pressure on the *vena portarum* must occasion the same effects on the other abdominal viscera as obstruction in the liver itself; and these effects, Dr. Whytt alleges, are occasioned "by hindering the free circulation of the fluids through these parts, by affecting their nerves with an uneasy sensation, and by preventing digestion; in the liver and spleen, by impeding the secretion of bile, and, by their weight, occasioning a disagreeable sensation, not only in these, but in the neighbouring parts by sympathy; in the mesentery, by preventing the further preparation of the chyle, and its course towards the thoracic duct; in the uterus and ovaria, by disturbing the functions of these parts, and by consent affecting the stomach and bowels."

The latter causes above-mentioned, especially the previous occurrence of intermitting and remitting fevers, may give rise to hypochondriasis, by their well-known influence on the abdominal viscera, especially the liver and spleen, which they often leave in an enlarged, indurated, or scirrhus state; from which the rest of the adjoining organs will be disordered in the way just stated. The observation, that wandering gout, as it has been called, gives rise to these nervous derangements is as old as Aretæus; and Musgrave, Whytt, and others among the moderns, have borne testimony to the correctness of the observation. It is, however, only an hypothetical expression of the fact, that when a regular fit of gout has occurred, these local and varying complaints have for a time disappeared; but affords no just grounds for the supposition of a morbid humour afloat in the system. (See GOUT and HUMORAL Pathology.) And in the same manner, the relief of hypochondriacal symptoms, on the appearance of certain pustular, scurfy, or other cutaneous eruptions, has been deemed a further proof that complaints of this kind proceed from some morbid humour in the blood; a notion which we have endeavoured to refute in the articles just referred to. See Whytt, loc. cit. Musgrave de Arthritide Anomala, cap. 19.

With respect to the *proximate cause*, or the essential constituent part of the disease, almost all writers have agreed in referring it to a morbid condition of the chylopoetic and other abdominal viscera, as we learn from the following enumeration by Dr. Whytt. "Many authors," he observes, "have ascribed this disorder in men to obstructions in the spleen, liver, and mesentery. Highmore to a vitiated constitution of the stomach. (Exercit. de passione hyster. et affect. hypochond.) Willis to an indisposition of the brain and nerves, or to a fault of the spirits. Etmüller, who confounds the hypochondriac disease, when in a higher degree, with the scurfy, has written a dissertation to prove that its seat is not in the spleen, but in the intestines, especially in that part of the *colon*, which lies in the left hypochondre, in which the excrements often stagnate, and where much wind is pent up. (Opera p. 1820.) Sydenham ascribes the same

distemper to an ataxy or confusion of the spirits. (Epist. ad D. Cole.) Maudeville to a disordered chylification, and a deficiency or paucity of the spirits. (Treatise on the hypochond. and hyster. Passions, Dial. 1. and 2.) Juncker makes the *causa proxima* of the hypochondriac affection to consist in an obstructed motion of the blood in the *vena portarum* and viscera connected with it. (Conspectus Medicinæ, p. 186.) Boerhaave derives it from an atrabiliary humour lodging in the pancreas, spleen, stomach, and neighbouring organs. (Aphorism 1098.) Hoffmann from a perverted peristaltic motion of the stomach and intestines. (Syst. Med. Rat. tom. iii. p. 3. cap. 5.) And, lastly, Dr. Cheyne is of opinion, that all great nervous disorders proceed from some glandular obstruction in the stomach, bowels, liver, spleen, mesentery, or other organs of the lower belly. (English Malady, part ii. cap. 7.)"

It may be observed, then, that the observations of physicians from early times have nearly coincided, in referring the seat of the diseased action, upon which the symptoms of hypochondriasis depend, to the viscera of the abdomen; that the very appellation of the disease is deduced from such observations; that the uneasy sensations of patients, under this disease, are principally ascribed to the same part of the body; and that the disease often terminates in actual morbid structure of the organs there contained. The manner in which disease in these organs may give rise to the singular morbid sensations in distant organs, has been briefly touched upon above; and those who wish for farther illustration, in regard to the wonderful and widely extended sympathy, which obtains between the alimentary canal and almost the whole system, will be gratified by the perusal of the first chapter of Dr. Whytt's treatise, so often referred to in this article. (See also SYMPATHY.) A very able and experienced teacher in London infers from these facts, which opinion, he alleges, is corroborated by the superior success of a particular mode of treatment, "that the proximate cause of hypochondriasis, in a curative view, consists in a sluggish and irregular state of the hepatic function." Dr. Curry's Syllabus of Lectures at Guy's Hospital, p. 199.

Diagnosis.—There is some difficulty in drawing a precise line of distinction between hypochondriasis, on the one hand, and *dyspepsia* (indigestion), *hysteria*, and *melancholia*, on the other. This arises partly from the circumstance, that these diseases have all several symptoms in common; that hypochondriasis is often combined with one or other of them; and that they sometimes reciprocally pass into each other. There are few cases of hypochondriasis in which some degree of dyspepsia is not present; but Dr. Cullen has pointed out a striking difference in the disease, as it occurs in two different temperaments, or states of the constitution: first, as it occurs in *young* persons of both sexes, in men of a *sanguine* temperament, and of a lax and flaccid habit; and, secondly, as it occurs in *elderly* persons of both sexes, of a *melancholic* temperament, and of a firm and rigid habit. "These two different cases of the combination of vapours and dyspepsia," he says, "I consider as two distinct diseases, to be distinguished chiefly by the temperament prevailing in the persons affected. As the dyspepsia of sanguine temperaments is often without vapours; and as the vapours, when joined with dyspepsia in such temperaments, may be considered as perhaps always a symptom of the affection of the stomach, so to this combination of dyspepsia and vapours, I would still apply the appellation of *dyspepsia*," &c. "But the combination of dyspepsia and vapours in melancholic temperaments, as the vapours, or the turn of mind peculiar to the temperament, are essential circumstances of the disease; and as this turn of mind is often with few or only slight symptoms of dyspepsia,

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and even though the latter be attending, as they seem to be rather the effects of the general temperament than of any primary or topical affection of the stomach, I consider this combination as a very different disease from the former, and would apply to it strictly the appellation of hypochondriasis." Dr Cullen farther remarks, "I believe the affection of the mind is commonly different in the two diseases; in dyspepsia it is often languor and timidity only, easily dispelled; while in hypochondriasis it is generally the gloomy and rivetted apprehension of evil. The two diseases are also distinguished by some other circumstances. Dyspepsia, as I have said, is often a symptomatic affection, while hypochondriasis is, perhaps, always a primary and idiopathic disease. As debility may be induced by many different causes, dyspepsia is a frequent disease, while hypochondriasis, depending upon a peculiar temperament, is more rare." Cullen, First Lines, par. 1227 and 1231.

Most of the older writers consider *hysterical* and *hypochondriacal* affections as essentially the same, differing no more from each other than as the frame of the female sex, in which *hysteria* most commonly occurs, is more delicate than that of the male, which is most liable to hypochondriasis; or inasmuch as the *uterus* is supposed to be the seat of the disease in the one case, while the liver, spleen, or some contiguous viscous, is believed to be chiefly deranged in the other. The intelligent physician, Fred. Hoffmann, seems to have been one of the first to point out the difference of the two diseases, in respect to their symptoms, causes, and termination. (Med. Rat. Syst. tom. iii. p. 4. cap. 5. § 5 & 6.) There is this obvious difference between hysteria and the disease in question, in regard to the state of the spirits, to wit, while in hypochondriasis these are always in some degree low, inspiring the patient with a greater or less dread and apprehension with respect to the state of his bodily health; no persons, on the contrary, have a greater flow of high spirits than hysterical patients often exhibit; and the suddenness with which the symptoms change from one class to an opposite one, without any evident cause, or on the slightest imaginable, is one of the most remarkable features of the hysterical disease, not to mention the peculiar convulsive paroxysms, the *globus*, &c. which very frequently accompany the latter. See Hysteria.

With regard to the distinction between hypochondriasis and *melancholy*, an ambiguity has arisen, not only from the one occasionally degenerating into the other, but from the difference of opinion among medical men, as to the use of the terms. The generality of writers agree in confining the term hypochondriasis to those instances of dejection of spirits and gloomy apprehensions, which relate exclusively to the personal bodily health of the patient, while they appropriate the term melancholy to those cases in which the despondency and anxiety are fixed upon external relations, as the supposed loss of friends, the imaginary influence of calumny, persecution, &c. In the state of melancholy, too, the digestion is often not impaired, whereas indigestion almost invariably accompanies hypochondriasis; and it may be added, that in hypochondriasis the indigestion precedes this sorrowful state of the mind; whereas, in melancholia, when idiopathic, the state of the mind precedes, and is in a great measure unconnected with the indigestion. (Sims, in Memoirs of Med. Society of Lond. vol. v. p. 393.) Dr. Crichton has expressed an opinion, that it is of little utility to confine our diagnostic observations to the nature of the erroneous ideas, and he includes a much wider range in his notion of hypochondriasis. Nevertheless he subscribes in some measure to the distinctions above made, in admitting, that "when hypochondriasis arises *primarily from diseased viscera*, the erroneous ideas, which present themselves to the

mind, generally concern their own frame; but when it has *primarily arisen from melancholia*, then the morbid ideas are for the most part unnatural, or at least unreasonable fancies, either concerning other people, or their own worldly affairs." (Vol. i. p. 201.) These distinctions are all that are requisite with a practical view, and it is immaterial by what name we designate them, provided we avoid the confusion which an undefined acceptance of ordinary terms must occasion.

Cure of Hypochondriasis.—The method of treatment, required for the removal of hypochondriasis, must necessarily vary in different cases, according to the age, temperament, and particular symptoms of different individuals; and the attention of the physician must be directed more or less to the bodily or to the mental indisposition, accordingly as the one or the other is found to predominate. In all cases, indeed, these two indications must principally be kept in view; 1. To correct the particular dyspeptic or other morbid state of the alimentary canal, and of the organs more immediately connected with it; and 2. To occupy the mind with a variety of interesting impressions, connected by a natural association, and thus gradually to weaken and destroy the morbid concatenation of ideas which had taken place.

So far as the bodily health is concerned, and especially that of the stomach, it might seem necessary only to have recourse to the usual remedies for *indigestion*; and that practice has generally been carried on with little distinction; but Dr. Cullen has justly pointed out some distinction which is to be made. Where the symptoms of indigestion are particularly urgent, then the same means must be resorted to for their relief, as in cases of simple dyspepsia. Thus, where excess of acidity, which, from the slow evacuation of the stomach in melancholic temperaments, often arises to a high degree in hypochondriasis, occurs, it must be obviated and corrected with the utmost care, by the use of the several antacids, and other means adapted to that purpose. (See INDIGESTION.) In like manner, the distress arising from flatulency, heartburn, costiveness, &c., may be alleviated by the appropriate means. (See the same article; also CARDIACALGIA, FLATULENCE, and CONSTIPATION.) The point in regard to which Dr. Cullen suggests an important distinction in the treatment of hypochondriasis and simple dyspepsia in sanguine habits, relates to the use of corroborant medicines, to restore the tone of the stomach. "In dyspepsia," he says, "the chief remedies are the tonic medicines, which to me seem neither necessary nor safe in hypochondriasis; for in this there is not a loss of tone, but a want of activity that is to be remedied." (First Lines, 1239.) And he suggests, that a practice directly opposite to that employed in the case of dyspepsia is often to be followed. Cold bathing, he observes, is often highly useful to the dyspeptic, and as a general stimulant, may sometimes seem useful to the hypochondriac; but it is not commonly so to the latter; while, on the other hand, warm bathing, hurtful to the dyspeptic, is often extremely useful to the hypochondriac. Another instance, he says, of a contrary practice necessary in the two diseases, and illustrating their respective natures, is, that the drinking tea and coffee is always hurtful to the dyspeptic, but is commonly extremely useful to the hypochondriac. These observations, however, admit of many exceptions. Chalybeate mineral waters have commonly been employed in hypochondriasis, and seemingly with success. But this, Dr. Cullen justly supposes, is probably to be imputed to the amusement and exercise usually accompanying the use of these waters, rather than to the tonic power of the small quantity of iron which they contain; and that perhaps the elementary water,

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by favouring the excretions, may have a share in relieving the disease.

One of the most important parts of the medical treatment of hypochondriasis, however, regards the diminution of that torpor and sluggishness, with which the hepatic functions are performed; if this is not accomplished, the other remedies, calculated to obviate the symptoms of dyspepsia, will afford but a brief and temporary alleviation of the disorder. This degree of morbid action in the liver, may be known by attending to the state of the bowels, and of the fecal evacuations from them; by the various colour and odour of which the deficiency or morbid condition of the bilious secretion may be estimated. The most useful treatment consists in maintaining a gentle stimulant operation upon the bowels by means of mild mercurial preparations, varying them in point of strength as the torpor of the alimentary canal is greater or less.

Exercise, as it strengthens the system in general, and the chylopoetic viscera in particular, as it obviates the pressure upon those viscera, which a sedentary and studious habit occasions, and as it contributes to maintain a free and active circulation through the most minute portions of the arterial system, and thus supports the proper performance of all the functions of secretion, (see EXERCISE,) proves a particularly advantageous remedy in hypochondriasis. But it is not less useful, perhaps, by its operation on the mind, than by that upon the body, as we shall immediately explain.

The management of the mind, in hypochondriacs, has been considered by Dr. Cullen as the most important part of the treatment, and as often a nice and difficult point. But as it must be admitted, that the morbid perceptions, which characterize the disease, originate actually in corporeal disturbance; so the state of mind must be considered as a symptomatic and secondary part of the complaint. Nevertheless, as the morbid associations will be strengthened, if not in any way opposed, after they have once gained admittance, independently of any increase of the corporeal disease, they should not be treated with neglect. It must be conceded, therefore, to Dr. Cullen, that "the firm persuasion which generally prevails in such patients, does not allow their feelings to be treated as imaginary, nor their apprehension of danger to be considered as groundless;"—"such patients therefore are not to be treated either by raillery or by reasoning. It is said to be the manner of hypochondriacs to change often their physician, and indeed they often do it consistently; for a physician who does not admit the reality of the disease, cannot be supposed to take much pains to cure it, or to avert the danger of which he entertains no apprehension." Hence Dr. Cullen allows, that if the pious fraud of a placebo be admissible at any time, it seems to be in treating hypochondriacs, even with the best view to their own security and advantage; for they, ever anxious for relief and fond of medicines, will apply to every source where these are offered, and, though frequently disappointed, will still take every new drug that can be proposed to them; and thus often become the victims of empiricism and ignorance. The following observations from the able professor above quoted, seem to comprehend all that is rational in regard to the mode of occupying the minds of hypochondriacs.

"As it is the nature of man to indulge every present emotion, so the hypochondriac cherishes his fears, and, attentive to every feeling, finds in trifles light as air a strong confirmation of his apprehensions. His cure therefore depends especially upon the interruption of his attention, or upon its being diverted to other objects than his own feelings. Whatever aversion to application of any kind

may appear in hypochondriacs, there is nothing more pernicious to them than absolute idleness, or a vacancy from all earnest pursuit. It is owing to wealth admitting of indolence, and leading to the pursuit of transitory and unsatisfying amusements, or to that of exhausting pleasures only, that the present times exhibit to us so many instances of hypochondriacism. The occupations of *business* suitable to their circumstances and situation in life, if attended with neither emotion, anxiety, nor fatigue, are always to be admitted, and persisted in by hypochondriacs. But occupations upon which a man's fortune depends, and which are always, therefore, objects of anxiety to melancholic men; and more particularly where such occupations are exposed to accidental interruptions, disappointments, and failures, it is from these that the hypochondriac is certainly to be withdrawn.

"The hypochondriac who is not necessarily, by circumstances or habits, engaged in business, is to be withdrawn from his attention to his own feelings by some *amusement*. The various kinds of sport and hunting, as pursued with some ardour, and attended with exercise, if not too violent, are amongst the most useful. All those amusements which are in the open air, joined with moderate exercise, and requiring some dexterity, are generally of use. Within doors, company which engages attention, which is willingly yielded to, and is, at the same time, of a cheerful kind, will be always found of great service. Play, in which some skill is required, and where the stake is not an object of much anxiety, if not too long protracted, may be often admitted. In dyspeptics, however, gaming, liable to sudden and considerable emotions, is dangerous; and the long continuance of it, with night-watching, is violently debilitating. But in melancholics, who commonly excel in skill, and are less susceptible of violent emotions, it is more admissible, and is often the only amusement that can engage them. Music, to a nice ear, is a hazardous amusement, as long attention to it is very fatiguing.

"It frequently happens, that amusements of every kind are rejected by hypochondriacs; and in that case, *mechanical means* of interrupting thought are the remedies to be sought for. Such is to be found in brisk exercise, which requires some attention in the conduct of it. Walking is seldom of this kind, though, as gratifying to the restlessness of hypochondriacs, it has sometimes been found useful. The required interruption of thought is best obtained by riding on horseback, or in driving a carriage of any kind. The exercise of sailing, except it be in an open boat, engaging some attention, does very little service. Exercise in an easy carriage, in the direction of which the traveller takes no part, unless it be upon rough roads, or driven pretty quickly, and with long continuance, is of little advantage.

"Whatever exercise may be employed, it will be most effectual when employed in the pursuit of a journey; first, because it withdraws a person from many objects of uneasiness and care, which might present themselves at home; secondly, as it engages in more constant exercise, and in a greater degree of it than is commonly taken in airings about home; and, lastly, as it is constantly presenting new objects which call forth a person's attention." Cullen, loc. cit.

We must observe, however, in conclusion, that the exercises, thus recommended, operate perhaps equally by restoring the corporeal health, as by abstracting the attention of the mind from its erroneous perceptions. Upon the same principle, *reasoning* with hypochondriacs is commonly useless; for, as Dr. Crichton remarks, although the singular notions which they entertain may now and then be eradicated from their minds by means of a little art, there is fel-

dom any real good to be derived from this, except the disease be at the same time cured; for if diseased impressions continue to arise in the mind from the disordered viscera, other illusive notions will spring up as one set is destroyed. And we have already alluded to a fatal instance of a forcible attempt to convince a hypochondriac of his error by a mechanical proof.

HYPOCHOPHOSIS, a slight degree of deafness.

HYPOCHYMA, or **HYPOCHYSIS**, from ὑπο, *under*, and χυσι, *to pour*, in *Surgery*, the disease usually denominated a cataract, which was supposed to proceed from a humour running under the crystalline lens. See **CATARACT**.

HYPOCISTIS, in *Botany*, Tournef. t. 477. See **CYTINUS**.

HYPOCISTIS, ὑποκίστις, formed of ὑπο, *under*, and κιστις, *cistis*, in *Medicine*, a juice used in the composition of theriaca, &c.

The hypocistis is the juice of a shoot or excrescence of the same name, sprouting out from the foot of a kind of cistus, or rock-rose, which is called *ledon* or *ladanifera*; common enough in the hot countries.

The shoot grows about three or four inches high; and one, two, or three inches thick; and is somewhat bigger at top than at bottom; and is soft, succulent, of a yellowish colour, and surrounded from space to space with a sort of rings, or brownish knots. It bears a number of little bell-shaped flowers, but no leaves.

When gathered, they pound it in a mortar, and express the juice: that done, they evaporate it on the fire till it come to the consistence of a hard blackish extract, much like Spanish liquorice: then they make it up into little masses for carriage. It is a mild astringent, of no particular smell or flavour, and recommended for stopping fluxes of the belly, vomitings, and hæmorrhages; though anciently much more than at present. It is also an ingredient in some unguents.

It is sometimes used as a substitute to acacia.—Dr. Quincy says, it is the more powerful astringent of the two.

HYPOCRANIUM, in *Surgery*, signifies an abscess under the cranium, between the bone and dura mater. The term is derived from ὑπο, *under*, and κρανιον, *the skull*.

HYPOCRAS. See **HIPPOCRAS**.

HYPOCRATERIFORMIS, *Saucer-shaped*, in *Botany*, the name given by Mr. Tournefort to a peculiar sort of flowers of plants, of the general order of the infundibuliform, but not so deep and narrow at the mouth as those simply so called, but expanded into the figure of a saucer.

HYPOCRINE, or **HIPPOCRENE**. See **HELICON**.

HYPOCRISY, ὑποκρισις, in *Ethics*, denotes dissimulation with regard to the moral or religious character.

HYPODIACONORUM FESTUM. See **CALENDARIUM festum**.

HYPO-DIEZEUXIS, in *Music*, according to Bacchius, sen. is the interval of a fifth between two tetrachords separated by a disjunction, and further by a third intermediate tetrachord. Thus there is a hypo-diezeuxis between the tetrachords hypaton and diezeumenon, and between the tetrachords synnemenon and hyperbolæon. See **TETRACHORD**.

HYPO-DORIAN, the lowest of all the modes of *Ancient Music*. It has its fundamental a fourth below that of the Dorian mode. It is said to have been invented by Philoxenus. This mode is grand, but cheerful: uniting sweetness with majesty.

HYPODROME. See **HIPPODROME**.

HYPOESTES, in *Botany*, a name given by Dr. Solander, who meant to write it *Hypoesthes*, from ὑποεστιν, *an inner vestment or covering*, expressive of the minute membranous internal calyx. Brown. Prodr. Nov. Holl. v. 1. 474.

Class and order, *Diandria Monogynia*. Nat. Ord. *Personate*, Linn. *Acanthi*, Juss.

Ess. Ch. Calyx in five equal segments, contained in a four-cleft three-flowered involucre. Corolla two-lipped. Seeds two in each cell, with an appendage at their base. Partition attached to the valves. Anthers of one cell.

A genus separated from *Justicia* by Solander and Brown, consisting of caulescent herbs or shrubs. The involucres, naturally three-flowered, though sometimes, by abortion, single-flowered, grow opposite, in axillary or terminal spikes, accompanied by leafy bractæas. The flowers are either purple or white. Within the proper calyx is a small white membranous integument.

Examples of this genus are found in the first section of Willdenow's *Justicia*, as *J. fastuosa*, Linn. Mant. 172. Vahl. Symb. v. 1. t. 1. sent by Koenig from Tranquebar. To this is nearly allied *J. Forskali* of Vahl.

Mr. Brown found a new species in the tropical part of New Holland, which he denominates *H. floribunda*.

HYPOGEUM, ὑπογειον, formed of ὑπο, *under*, and γαια, *earth*, in the *Ancient Architecture*, is a name common to all the parts of a building that are under ground; as the cellar, butteries, and the like places.

The term hypogæum was used by the Greeks and Romans for subterraneous tombs in which they buried their dead.

HYPOGEUM, ὑποσταιον, in *Astrology*, is a name given to the celestial houses which are below the horizon; and especially the *inimæ cali*, or bottom of heaven.

HYPOGASTRIC ARTERY, in *Anatomy*, a name under which the internal iliac is often described, as the corresponding vein is also called the hypogastric. More commonly, however, the name is given to those continuations of the trunks of the internal iliacs, which ascend along the sides of the bladder to the umbilicus, where they take the name of umbilical. They go to the placenta. See **EMBRYO** for their description.

HYPOGASTRIC Region, is the lower portion of the abdominal cavity. See **ABDOMEN**.

HYPOGASTRIUM is the same with the **HYPOGASTRIC region**; which see.

HYPOGASTROCELE, from ὑπογαστριον, and κελυ, *tumour*, in *Surgery*, a ventral hernia. See **HERNIA**.

HYPOGLOSSUM, in *Botany*. See **RUSCUS**.

HYPOGLOSSUS, in *Anatomy, from ὑπο, *under*, and γλωσσα, *the tongue*, the nerve of the ninth pair, so called from its situation under the tongue.*

HYPOGLOTTIS, or **HYPOGLOSSIS**, composed of ὑπο, *under*, and γλωττα, *tongue*, is a name given to two glands of the tongue.

There are four large glands of the tongue; two of them called hypoglotides, situated under it, near the venæ ranulares; one on each side of the tongue. They serve to filtrate a kind of ferous matter, of the nature of saliva, which they discharge into the mouth by little ducts near the gums.

HYPOGLOTTIS, or *Hypoglossis*, in *Medicine*, denotes an inflammation or ulceration under the tongue; called also *ranula*.

HYPO-IASTIAN, in *Music*. See **HYPO-IONIAN**.

HYPO-IONIAN, the second of the modes of *Ancient Music* from the lowest: Euclid calls it hypo-iaastian, and grave Phrygian. Its fundamental is a fourth below the Ionian mode.

HYPOLÆNA, in *Botany, from ὑπο, *under*, and λαεινα, *a cloak, or covering*, alluding to the short integument which invests the base of the fruit. Brown. Prodr. Nov. Holl.*

τ. 1. 251. Class and order, *Diacia Triandria*. Nat. Ord. *Calamaria*, Linn. *Restiaceae*. Brown.

Eff. Ch. Male, Cal. scales of a catkin. Perianth a husk of six leaves. Stamens three. Anthers simple, peltate.

Female, Cal. scales numerous, imbricated. Perianth a husk of six leaves, terminal, solitary. Style in two or three divisions, deciduous. Nut bony, naked, single-seeded, longer than the perianth.

A genus established by Mr. Brown, who observes, that it has the habit as well as the male flowers, of *Restia*, for which reasons, as well as on account of the want of a lobed external appendage to the perianth, he has separated it from the *Willdenovia* of Thunberg, whose fruit is similar, but its male inflorescence (not well described by Thunberg), and its habit are different.

The species are,

1. *H. fastigiata*. Stems branched, round, striated, ash-coloured; their branches somewhat level-topped. Glumes of the perianth at length oval.

2. *H. exsulca*. Stems branched, round, smooth; their branches alternate, quite simple. Glumes of the perianth roundish.

Both grow in various of the cooler parts of New Holland.

HYPOLEPIS, from ὑπο, *under*, and λεπτις, *a scale*. Perfoon Syn. v. 2. 598. The same plant as *Phelypæa sanguinea* of Thunberg and Willdenow. See PHELYPÆA.

HYPO-LYDIAN, the fifth mode of the *Ancient Music*, beginning from the lowest. Euclid calls it hypo-iatian and hypo-phrygian. Its fundamental is a fourth below the Lydian. Euclid distinguishes two hypo-lydian modes; the acute, which is that of this article, and the grave, which is the same as the hypo-æolian.

The hypo-lydian mode was proper for funeral chants, sublime and divine meditations: its invention is attributed by some to Polymnestes of Colophon, by others to Damon of Athens.

HYPOLYTRUM, in *Botany*, from ὑπο, *under*, and ελπίς, *a cover, or scale*, on account, as we presume, of the internal scaly covering of the seeds. Perfoon Syn. v. 1. 70. Class and order, *Triandria Monogynia*. Nat. Ord. *Calamariæ*, Linn. *Cyperoidæ*, Juss.

Eff. Ch. "Scales imbricated every way. Seeds with an internal cover, resembling a glume of three or four valves. Stamens two or three. Stigmas one or two." Perfoon.

This is suspected to be the same genus with *Hypalyptum*, (see that article,) and even their names are perhaps originally the same. Perfoon defines three species, *H. latifolium senegalense*, and *gracile*, all communicated by M. Richard. Their definitions, however, do not accord with our above-mentioned species of *Hypalyptum*.

HYPO-MIXO-LYDIAN, a mode added by Guido d'Arezzo to the *Ancient Music* of the church: it is properly the plagal of the mixo-lydian mode, and its fundamental is the same as that of the Dorian mode.

HYPOMNEMATOGRAPHUS, ὑπομνηματογράφος, derived from ὑπο, *register*, and γραφειν, *I write*, in the *Primitive Church*, an officer who attended on the bishop, and kept a register of his consecrations.

HYPOMOCHLION, ὑπομοχλιον, formed of ὑπο, *under*, and μοχλος, *lever*, in *Mechanics*, the fulcrum of a lever, or the point which sustains its pressure, when employed either in raising or lowering bodies.

The hypomochlion is frequently a roller set under the lever; or under stones, pieces of timber, &c. that they may be the more easily lifted up, or removed.

HYPONITIS, in *Botany*, a name given by Dillenius to

a genus of plants, called by Tournefort orobanchoides. See MONOTROPA.

HYPONOMOS, in *Surgery*, from ὑπο, *under*, and νομος, *a phagedenic ulcer*, a deep phagedenic ulcer.

HYPOPHORA, ὑποφορα, in *Rhetoric*, the first part of the prolepsis: thus, in the following instance: "but some men will say, how are the dead raised, or with what body do they come?" is the *hypophora*; and, *thou fool, that which thou seest*, &c. is the *antihypophora*, or solution of the objection.

HYPOPHORA, in *Surgery*, a deep, fistulous ulcer, from ὑποφορισ, to be carried underneath.

HYPO-PHYGIAN, one of the modes of *Ancient Music*, derived from the Phrygian. Its fundamental was a fourth higher. Euclid speaks still of another hypo-phrygian mode below it; which was called with more accuracy the hypotionian mode.

The character of the hypo-phrygian mode was calm, tranquil, and proper to appease the vehemence of the Phrygian. It was said to have been invented by Damon, the friend of Pythias, and the music-master of Socrates.

HYPOPTHALMION, from ὑπο, *under*, and οφθαλμος, *the eye*, in *Surgery*, denotes a swelling, which sometimes takes place under the eye in cases of dropsy and cachexy.

HYPOPTHALMUM, in *Botany*, a name used by some authors for the *aster atticus*.

HYPOPHYLLOCARPODENDRON, in *Botany*, Boerhaave. See LEUCADENDRON and PROTEA.

HYPOPHYLLOSPERMOUS PLANTS, formed of ὑπο, *under*, φυλλος, *leaf*, and σπέρμα, *seed*, are such plants as bear their seeds on the back-sides of their leaves.

HYPOPHYSIS, from ὑπο, *under*, and φυν, *to produce*, an inflammation of the eye, arising from a turning of the eye-lid inwards. See TRICHIASIS.

HYPOPIA, from ὑπο, *under*, and οψ, *the eye*, an ecchymosis just under the eye; a black eye.

HYPOPITYS, in *Botany*, Dill. Gen. 7. See MONOTROPA.

HYPOPODIUM, in *Antiquity*, a piece of furniture belonging to the baths; its use was to set or rest the feet on, as the name imports.

HYPO-PROSLAMBANOMENOS, in *Music*, the name of an additional string or sound, which Guido is said to have added to the scale of the Greeks, a note below proslambanomenos, answering to gammut or G on the first line in the base. The author of this new found expressed it by the letter *ζ*, gamma, of the Greek alphabet, whence the name of gammut was derived. See DIAGRAM.

HYPOPYON, or HYPOMPIUM, is a term in *Surgery*, usually signifying an abscess under the cornea, in the interior or posterior chamber of the aqueous humour. The word is compounded of ὑπο, *under*, and πυον, *pus*.

A distinction has been drawn by some writers between the case, where the matter is situated in the anterior chamber, and that where it lies in the posterior one, the latter instance being sometimes named *empyesis oculi*. But since both chambers always have a free communication with each other through the pupil; since one chamber can never have much matter in it, without a part gliding into the other; and lastly, as the matter in either example may be discharged through the same opening; Richter contends, that the difference in the cases is not of much importance. Hypopium is generally a consequence of a violent inflammation of the eye; yet unusual instances do present themselves, in which the disease comes on quite unpreceded by any degree of ophthalmia. This is said to happen particularly in venereal and scrophulous patients. A woman, in the Royal In-

HYPOPYON.

firmly of Edinburgh, had a very considerable collection of matter in the anterior chamber, accompanied with very little, or no inflammation. The matter altered its form and place according to the position of the head, and, during the day, the agitation of the body, produced by walking, mixed the matter with the aqueous humour, and rendered the whole anterior chamber turbid. Wardrop's *Essays on the Morbid Anatomy of the Human Eye*, p. 51.

Hypopyum, when it is a consequence of inflammation, can only proceed from a violent degree of it, and it commonly makes its appearance under the following symptoms. The pain is throbbing and acute, and instead of being confined to the eye-ball and upper part of the forehead extends as far as the back of the head. All on a sudden, however, upon the attack of a shivering fit, it undergoes a diminution, and it is at this period that the first drop of matter generally makes its appearance at the bottom of the anterior chamber, in the form of a semilunar whitish speck, which, in proportion as the quantity increases, gradually becomes larger, spreads upwards, covers the pupil, and at length occupies the whole of the anterior chamber. In this state, the cornea exhibits every where a white appearance. The progress of the disease is various. When the case is left to take its own course, the pain often becomes again excessively severe, and no alleviation is experienced, till the matter makes its way through the cornea, and escapes, together with the aqueous humour, and, in general, a considerable portion of the vitreous. The pain immediately abates; but the eye is irrecoverably destroyed. In favourable cases, the matter, with the aid of proper means, is entirely dispersed. Sometimes it is only partly absorbed, and a portion continues, either upon the inside of the cornea, upon the surface of the crystalline lens, or in the pupil, so as to produce either total blindness, or a material impairment of vision.

The matter of hypopyum is commonly represented to be pus; but Scarpa, the celebrated surgeon at Pavia, adopts the opinion, that it is only coagulating lymph, which is effused from the highly inflamed choroides and uvea in severe ophthalmies affecting the interior of the eye.

While the violence of the inflammation of the eye lasts, the hypopyum never fails to enlarge; but as soon as this stage ceases, and the ophthalmia falls into its second period, or that attended with local weakness, the matter in the anterior chamber receives no longer any addition, and, from that moment, is disposed to diminish. See Scarpa *Sulle Malattie degli Occhi*.

Surgical writers have recorded curious examples of a periodical species of hypopyum. A man, of a bad habit of body, became blind the first fortnight of every month. A yellowish matter, which was so thick and opaque as to conceal the iris, could always at this time be remarked in the anterior chamber. The conjunctiva was also inflamed; but not painful. On the fourteenth day of each month these complaints used to disappear, and the sight to return. (Janin *Mémoires sur l'Œil*, p. 412.) Another person was deprived of his eye-sight every morning, and, during the attack, the aqueous humour was always very turbid. The patient at the same time regularly suffered pain under the short ribs, on the right side. The paroxysm constantly terminated on a copious discharge of air being made from the alimentary canal. See Richter's *Anfangsgründe* Band 3. p. 97.

The treatment of hypopyum consists either in attempting to disperse the matter collected in the anterior or posterior chamber, or else in making an incision for its evacuation. Against the latter proceeding, as a general one, Scarpa has

urged several weighty considerations, as we shall presently notice.

The tendency of an hypopyum to diminish, as soon as the first violence of the ophthalmia is over, shews, according to Scarpa's judgment, how important it is, in order to check the progress of hypopyum, to employ the most powerful means for subduing the first severity of the inflammation of the eye. With this view, copious evacuations of blood, both generally and topically, are recommended. When chemosis prevails, the conjunctiva is to be divided. Mild aperients, blisters to the nape of the neck, little bags of emollient herbs applied to the eye, and other measures for the relief of the first stage of severe ophthalmia, are highly necessary. These will be known to have fulfilled the desired end, by the abatement of the lancinating pains in the eye, the cessation of the febrile symptoms, the restoration of the free motion of the eye, and the hypopyum no longer continuing to increase. The first measures have now answered every expectation, notwithstanding the eye-lids and conjunctiva may still be affected with a degree of redness. The lower orders of people are frequently seen in the second stage of acute ophthalmia, going about with an hypopyum, and making no complaint whatever of any of the serious sufferings always attendant on the first stage of acute ophthalmia. It is only at this crisis, or at the termination of the acute stage of violent inflammation of the eye, that the hypopyum ceases to enlarge, and begins to be absorbed, provided this salutary process be not impeded by any wrong plans.

Scarpa remonstrates against making an incision in the cornea to let out the matter; a plan which has been commonly taught by surgical authors, and which has been extensively adopted, but which most frequently gives rise to evils worse than hypopyum itself, and this, notwithstanding Richter's advice be followed, not to let out all the matter at once, and not to promote its exit by pressure or injections. Scarpa assures us, that a wound in the lower part of the cornea, how small soever it may be, most commonly re-produces the severe acute ophthalmia, and occasions a large extravasation of lymph, or matter in the chambers of the aqueous humour. Besides, after opening the cornea, the matter, if left to itself, would be several days in becoming entirely discharged, during all which time it would keep the edges of the wound asunder, and make them suppurate. In this manner the cut would be changed into an ulcer, through which the aqueous humour would escape, and in all probability a fold of the iris be protruded. Even the crystalline lens itself might fall out. No arguments in favour of the practice can justly be drawn from the successful result of certain cases, in which the hypopyum spontaneously bursts. Scarpa reminds us that there is a wide difference between the effects of a spontaneous opening into a natural or preternatural cavity of the animal body, or of one made with caustic, and the consequences of an opening made with a cutting instrument. In the two first methods the subsequent symptoms are constantly milder than in the last. Besides, the fact is, that when an hypopyum discharges itself through an ulcerated opening, it not infrequently happens that not only the aqueous humour escapes, but a prolapsus of the iris also happens.

Scarpa only admits the utility and necessity of dividing the cornea, when the coagulating lymph, or matter of an hypopyum, exists in very large quantity, and produces such distention of the eye, and such urgent symptoms, as put the patient's life into danger, besides menacing a total destruction of the affected organ.

It is maintained by this distinguished anatomist and surgeon, that as the fragments of cataracts, when pushed through the pupil into the anterior chamber of the aqueous humour, are

in time absorbed, there cannot be a doubt that the coagulating lymph, in the example of hypopium, also admits of being taken away by the absorbents, as soon as a further extravasation no longer goes on, and the lymphatics begin to recover their activity. Scarpa, therefore, inculcates that the resolution of an hypopium is the first thing which the surgeon ought to aim at in the treatment of the common form of the disease, and that the best method of doing this is to subdue the first vehemence of the acute ophthalmia by antiphlogistic remedies, and mild, emollient, topical applications.

When success attends this plan, as it does in the generality of cases, the hypopium not only ceases to enlarge, but even begins to diminish, in proportion as the violence of the inflammation abates.

Various remedies have been recommended for the purpose of dispersing the matter collected in the chambers of the aqueous humour. Monsieur Janin was of opinion, that when the matter disappeared, it was not absorbed, but exuded through the pores of the cornea. His advice, consequently, was to endeavour to make the pores of this membrane as pervious as possible, by the topical employment of emollient applications, so as to promote the escape of the matter. For this object he recommends the decoctum malvæ, as exceedingly efficacious. He used to bathe the eye several times a day with this remedy, and in the intervals apply compresses wet with the same. Janin assures us, that even when both the chambers of the eye were full of matter, and the cornea seemed likely to burst, this method proved successful, the dispersion being generally effected in about twelve or fourteen days. There can be no doubt that benefit has been derived from using the decoctum malvæ, especially as Pellier and other eminent oculists confirm the accounts of the good effects of the application. But we believe with Scarpa, that it is by no means superior to several other remedies, and that every topical emollient application, if conjoined with such internal antiphlogistic treatment as is the most proper for repelling the acute stage of the severe ophthalmia, would be equally beneficial. Mere warm water is productive of quite as much good.

With respect to Janin's notion of the matter of the hypopium exuding through the pores of the cornea, the opinion is altogether destitute of foundation. Richter rightly maintains, that when an hypopium is dispersed, there are no appearances in support of such a sentiment. When blood is extravasated in the anterior chamber, and afterwards disappears, it must be by absorption, for if it exuded out of the cornea, it would be visible upon the surface or in the substance of this transparent membrane.

Woolhouse recommends, for the dispersion of a hypopium, the application of a poultice, made of the pulp of a roasted apple, and containing a small proportion of camphor. Guerin advises the use of a collyrium, composed of rose-water, muriate of ammonia, aloes, and myrrh. Mauchart speaks in favour of warm collyria, and of fomenting the eye.

We decidedly join Richter in thinking, that, as the eye is in general violently inflamed, all irritating applications must be hurtful and improper. Little benefit can be expected from any remedies which only come into contact with the eye-lids, as, for instance, Woolhouse's poultice. But, supposing the applications to act more extensively, they can hardly operate effectually upon the surfaces, by which the matter of the hypopium is secreted. Some good, however, will result from emollients, and much more may reasonably be expected from such means as tend to excite and quicken the action of the absorbents, as, for example, antimonials, aperients, bleeding, blisters on the nape of the neck, or behind the ears,

&c. These remedies not only promote the absorption of the matter, they likewise have a powerful effect in putting a stop to the inflammation.

When the first stage of severe ophthalmia has resisted the best modes of treatment, or when these have been practised too late, the matter in the chambers of the eye is occasionally so abundant, after the first stage of the ophthalmia is over, that it continues for a long while to obstruct vision. Scarpa has often seen patients, especially paupers, who, from negligence or wrong treatment, have remained a great while after the cessation of the acute stage of an ophthalmia, with the anterior chamber almost entirely filled with the glutinous matter of hypopium. When the inflammation ceases, these persons are described as wandering about the streets with great unconcern, and having no affliction but the impairment of their sight. In this second stage of ophthalmia, the hypopium cannot be dispersed, either so speedily, or by exactly the same treatment as in the first stage. In a case of this description, Scarpa recommends such remedies as are most calculated to invigorate the debilitated tone of the vascular system of the eye, particularly the lymphatics. The time necessary for the completion of this object will vary according to the patient's age and the nature of his constitution. The surgeon ought carefully to try the degree of irritability in the eye, by introducing, between the globe and the eyelids, a few drops of a collyrium, containing some sulphate of zinc, and mucilage of quince-seeds. Should the eye seem too strongly stimulated by this application, it must not be used, and little bags, filled with warm mallows and a few grains of camphor, are to be substituted for it. In the intervals the vapour of the spiritus ammoniæ comp. may be applied to the eye. A blister is also to be put on the nape of the neck. As soon as the eye will easily bear the vitriolic collyrium, this is to be employed, and its strength may afterwards be gradually increased by the addition of a few drops of camphorated spirit.

Under such treatment, the hypopium may often be observed to disappear regularly, as the chronic ophthalmia is removed.

We are not, however, always to expect to be thus successful with regard to hypopium, attended either with the first or second stage of ophthalmia. When the extravasated matter strongly distends the chambers of the aqueous humour, and the cornea in particular, the most skilful treatment will sometimes not avail in preventing ulceration, opacity, and the bursting of the central part of the cornea.

When the ulcerated opening is formed, some of the matter of the hypopium escapes, and a degree of amendment follows; but the relief is only of short continuance, as a portion of the iris is soon protruded through the aperture. If, in an urgent case of this kind, the bursting of the cornea were not speedily to happen, the violent symptoms depending on the distention of the eye-ball would compel the surgeon to make an opening in that membrane. This form of the disease is described as being excessively severe, and even attended with danger. The head-ache, and pain in the eye, are frequently so grievous as to occasion delirious symptoms. According to Scarpa, the surgeon may the more readily make up his mind to practise an incision, as there is hardly any hope of saving the eye.

Should there be any reasonable chance of restoring the transparency of the cornea, and of preserving the eye, Scarpa approves of opening this membrane at its lower part, just as is done in the operation of extracting the cataract. But when no such pleasing prospect occurs, he thinks the best and quickest way of relieving the severe pain of the hypopium, is to introduce across the central point of the cornea

near a small bistoury, so as to make a cut about one line and a half broad. The little flap is then to be raised with forceps, and removed with one stroke of a pair of scissors.

The opening, thus made, will not be liable to close like a simple incision. The fluid part of the matter immediately escapes, and rest some time afterwards, followed, sooner or later, by the crystalline lens and vitreous humour.

As soon as the operation is done, a bread and milk poultice is to be applied, and care taken to change it every two hours. At the same time such means are indicated as are most calculated to avert and diminish inflammation, and sooth nervous irritation. The eye gradually suppurates and heals, after which it is generally in a state to admit of the application of an artificial eye. See *EYE, Artificial*.

Although Scarpa sanctions the performance of an incision in the foregoing case of hypopium, which is attended with urgent, distressing, and perilous symptoms, he maintains that the practice is highly improper in common instances, for reasons already explained.

With respect to cutting out a piece of the centre of the cornea, as is advised by Scarpa, we feel persuaded that nothing can justify this proceeding unless it is decidedly certain that the eye and eye-sight are beyond recovery. In any other circumstance, the incision should undoubtedly be executed, as in the extraction of the cataract. See *CATARACT*.

HYPORCHEMA, formed of ὑπορχεμαι, *I accommodate my dancing to a singing chorus*, of ὑπο and ρχεμαι, *I dance*, in the *Greek Poetry*, a poem composed of divers kinds of verses, and of different lengths; but always very short, and full of Pyrrhic feet. This poem was composed either to be sung or played with the flute or cithara, but to regulate a dance according to the sound of voices and instruments. Proclus says, it was a dance accompanied with a song. These were, probably, the origin of the Italian *Ballata*; which see.

HYPORISMA, in *Surgery*, an aneurism.

HYPOSCENIUM, ὑποσκησιον, in *Antiquity*, a partition under the pulpit or logeum of the Greek theatre, appointed for the music.

HYPOSCHESES, ὑποσχησις, in *Rhetoric*, the same with division.

HYPOSPADIAS, in *Surgery, from ὑπο, *under*, and σπασω, *I draw*, a Greek name anciently given to a person, who had the orifice of the canal of the ureter not directly at the extremity of the gland. Galen applies the same name to those, the frenum of whose penis is too short, on which account it is bent in erection; this is easily remedied by cutting the ligament, and washing the wound with warm wine.*

HYPOSPATHISMUS, in the *Ancient Surgery*, an operation practised, by making three incisions in the forehead, to the very bone, about two inches long; in order to cut or divide all the vessels between those incisions. The design of the operation was to prevent defluxions on the eyes.

The word is ὑποσπαθισμὸς, formed of ὑπο, *under*, and σπαθω, *spatula*; by reason after incisions were made they thrust a spatula all along between the pericranium and the flesh.

HYPOSPAGMA, in *Surgery*, a contusion of the eye, attended with ecchymosis; a black eye.

HYPOTAPHYLE, from ὑπο, *under*, and σφαυλη, *the uvula*, a relaxation, or elongation of the uvula.

HYPOTASIS, ὑποτάσις, compounded of ὑπο, *under*, and ἵστημι, *I stand, I exist*, q. d. *subsistentia*, a Greek term, literally signifying *substance*, or *subsistence*; it is used in theology for *person*.

Thus some have held that there is but one nature or essence in God, but three hypostases, or persons.

The term hypostasis is of a very ancient standing in the

church. St. Cyril repeats it divers times, as also the phrase, *union according to hypostasis*. The first time it occurs in all Christian antiquity, is in a letter of that father to Nestorius, where he uses it instead of προσσωπον, the word we commonly render *person*, which did not seem expressive enough. "The philosophers, says St. Cyril, have allowed three hypostases: they have extended the divinity to three hypostases: they have even sometimes used the word *Trinity*: and nothing was wanting but to have admitted the consubstantiality of the three hypostases, to shew the unity of the divine nature, exclusive of all triplicity in respect of distinction of nature, and not to hold it necessary to conceive any respective inferiority of hypostases."

This term has occasioned great dissentions in the ancient church; first among the Greeks, and afterwards also among the Latins.

In the council of Nice, hypostasis was defined to denote the same with *essence*, or *substance*; so that it was heresy to say, that Jesus Christ was of a different hypostasis from the Father; but custom altered its meaning. See *TRINITY*.

HYPOTASIS, in *Medicine*, the sediment of the urine, or that thick heavy part of the urine which subsides and settles at bottom.

HYPOTATICAL, in *Theology*, is a term used in speaking of the mystery of the incarnation.

Hypotactical union, is a phrase used by some divines for the union of the human nature with the divine in the person of Jesus Christ.

HYPOTATICAL Principles, among the *Chemists*, and particularly the *Paracelsists*, are the three chemical elements, *salt, sulphur, and mercury*; called also the *tria prima*. See *PRINCIPLE* and *ELEMENT*.

HYPOTATICAL SYNAPHE, in the *Greek Music*, the disjunction of two tetrachords separated by the interposition of a third tetrachord conjoint with both; so that the homologous or relative strings of the two tetrachords, disjoined by the hypotatichon, have the interval of five tones, or a minor seventh between them. Such are the two hypaton and synmemon tetrachords.

HYPOTHECA, in the *Civil Law*, an obligation, whereby the effects of a debtor are made over to his creditor, to secure his debt.

The word comes from the Greek, ἐπιθήκη, *a thing subject to some obligation*; of the verb ἐπιτίθημι, *supponor, I am subjected*; of ὑπο, *under*, and τίθημι, *pono, I put*.

As the hypotheca is an engagement procured on purpose for the security of the creditor, various means have been made use of to secure him the benefit of the convention. The use of the pawn or pledge is the most ancient, which is almost the same thing with the hypotheca; all the difference consisting in this, that the pledge is put into the creditor's hands; whereas, in a simple hypotheca, the thing remained in the possession of the debtor. It was found more easy and commodious to engage an estate by a civil covenant than by an actual delivery: accordingly, the expedient was first practised among the Greeks; and from them the Romans borrowed both the name and the thing: only the Greeks, the better to prevent frauds, used to fix some visible mark on the thing, that the public might know it was hypothecate, or mortgaged by the proprietor; but the Romans, looking on such advertisements as injurious to the debtor, forbade the use of them.

The Roman lawyers distinguished four kinds of hypothecas: the *conventional*, which was with the will and consent of both parties: the *legal*, which was appointed by law, and for that reason called *tacit*; the *praetor's pledge*, when by the flight or non-appearing of the debtor, the creditor was

put in possession of his effects; and the *judiciary*, when the creditor was put in possession by virtue of the sentence of the court.

The *conventional* hypotheca is subdivided into *general* and *special*. The hypotheca is *general*, when all the debtor's effects, both present and future, are engaged to the creditor. It is *special*, when limited to one or more particular things.

For the *tacit*-hypotheca, the civilians reckon no less than twenty-six different species thereof.

HYPOTHECATE, from the Latin *hypotheca*, a *pledge*; to hypothecate a ship, is to pawn the same for necessities; and a master may hypothecate either ship or goods, for relief, when in distress at sea. For he represents the traders as well as the owners; and in whose hands soever a ship or goods hypothecated come, they are liable. 1 Salk. 34. 2 Litt. Abr. 95.

HYPOTHENAR, in *Anatomy*, a name given by Winslow to two muscles of the little finger. The abductor minimi digiti is his hypohenar minor; and the adductor ossis metacarpi minimi digiti is the hypohenar metacarpi.

HYPOTHENUSE, or rather **HYPOTENUSE**, ὑποθηνυσα, *subtendens*, formed of ὑποθηνυω, *subtendo*, I *subtend*, in *Geometry*, is the longest side of a right-angled triangle; or that side which subtends, or is opposite to the right angle.

Thus in the triangle ABC (Plate VIII. *Geometry*, fig. 100.) the side AC, opposite to the right angle ABC, is called the hypotenuse.

It is a celebrated theorem in geometry, that in every rectilinear right-angled triangle, as ABC, the square of the hypotenuse, AC, is equal to the squares of both the other sides, AB and BC. This is particularly called the Pythagorean theorem, from its inventor Pythagoras, who is said to have sacrificed a whole hecatomb to the Muses, in gratitude for the discovery. For proof of this theorem, let AD be the square on the hypotenuse AC, and BG, BI, the two squares on the sides AB and BC: let MBH be parallel to AE, meeting GF, produced, in H; and let EA be produced to meet GH in N, and DC to meet IK in O. If from the equal right angles GAB, CAN, the angle NAB, common to both, be taken away, there will remain NAG = BAC; whence, as the angle G is also = ABC, and the side AG = AB, the sides AN and AC (= AE) are likewise equal; and therefore the parallelogram AM = the parallelogram AH (being both on equal bases and between the same parallels); which last, and consequently the former, is equal to the square BG, standing on the same base AB, and between the same parallels. By the same mode of reasoning, the parallelogram CM is = the square BI; and, consequently, the square AD (= AM + CM) = both the squares BG and BI. The same reasoning is applicable to circles or any other similar figures; viz. that any figure described on the hypotenuse is equal to the sum of the two similar figures described on both the other two sides.

HYPOTHESIS, ὑποθεσις, formed of ὑπο, *under*, and θεσις, *positio*, of ἔθημι, *pono*; I *put*, in *Logic*, is a proposition or principle which we suppose, or take for granted, in order to draw conclusions for the proof of a point in question.

In disputation, they frequently make false hypotheses, in order to draw their antagonists into absurdities; and even in geometry, truths are often deducible from such false hypotheses.

Every conditional or hypothetical proposition may be distinguished into hypothesis and thesis: the first rehearses the conditions under which any thing is affirmed or denied; and the latter is the thing itself affirmed or denied.

Thus in the proposition, a triangle is half of a parallel-

ogram, if the bases and altitudes of the two be equal; the latter part is the hypothesis, if the bases, &c. and the former the thesis, a triangle is half a parallelogram.

In strict logic, we are never to pass from the hypothesis to the thesis; that is, the principle supposed must be proved to be true, before we require the consequence to be allowed. Dr. Barrow says, that hypotheses, or postulata, are propositions assuming or affirming some evidently possible mode, action, or motion of a thing, and that there is the same affinity between hypotheses and problems, as between axioms and theorems; a problem shewing the manner, and demonstrating the possibility of some structure, and an hypothesis assuming some construction which is manifestly possible.

HYPOTHESIS, in *Physics*, &c. denotes a kind of system laid down from our own imagination, by which to account for some phenomenon or appearance of nature.

Thus we have hypotheses to account for the tides, for gravity, for magnetism, for the deluge, &c.

The real and scientific causes of natural things generally lie very deep: observation and experiment, the proper means of arriving at them, are in most cases extremely slow; and the human mind is very impatient: hence we are frequently driven to feign or invent something that may seem like the cause, and which is calculated to answer the several phenomena, so that it may possibly be the true cause.

Philosophers are divided as to the use of such fictions or hypotheses, which are much less current now than they were formerly. The latest and best writers are for excluding hypotheses, and standing wholly on observation and experiment.

Whatever is not deduced from phenomena, says sir Isaac Newton, is an hypothesis; and hypotheses, whether metaphysical or physical, or mechanical, or of occult qualities, have no place in experimental philosophy. Phil. Nat. Prin. Math. in calce.

The Cartesians take upon them to suppose what affections in the primary particles of matter they please; just what figures, what magnitudes, what motions, and what situations, they find for their purpose. They also feign certain unseen, unknown fluids, and endue them with the most arbitrary properties; give them a subtlety which enables them to pervade the pores of all bodies, and make them agitated with the most unaccountable motions. But is not this to set aside the real constitution of things, and to substitute dreams in their place? Truth is scarcely attainable even by the surest observations; and will fanciful conjectures ever come at it? They who found their speculations on hypotheses, even though they argue from them regularly, according to the strictest laws of mechanics, may be said to compose an elegant and artful fable; but it is still only a fable. Cotes in Præfat. ad Newton. Princip.

HYPOTHESIS is more particularly applied, in *Astronomy*, to the several systems of the heavens; or the divers manners wherein different astronomers have supposed the heavenly bodies to be ranged, moved, &c.

The principal hypotheses are the Ptolemaic, Copernican, and Tychonic.

The Copernican is now become so current, and is so well warranted by observation, that the advocates of it hold it injurious to call it an hypothesis.

HYPOTHETICAL. *Proposition* and *Syllogism*. See **CONDITIONAL**.

HYPOTRACHELION, from ὑπο, *under*, and τραχηλος, *neck*, in *Anatomy*, denotes the lower part of the neck.

HYPOTRACHELION, in *Architecture*, is used for a little frieze in the Tuscan and Doric capital, between the astragal and annulets; called also the *colerin* and *gorgerin*.

The

The word is also applied by some authors, in a more general sense, to the neck of any column; or that part of the capital thereof below the astragal.

HYPOTYPOSIS, or *Imagery*, ὑποτύποισι, formed of the verb ὑποτύπω, *per figuram demonstro, I show, represent, or make any thing to be seen*; of ὑπό, *under*, and τυπός, *type, image, resemblance*, in *Rhetoric*, a figure whereby a thing is described or painted in such strong and bright colours, that it does not seem to be read, or heard, but actually seen, or presented before the eye.

Such is that elegant one of Cicero, wherein he paints the barbarity of Verres: "Ipse inflammatus scelere et furore, in forum venit. Ardebant oculi; toto ex ore crudelitas emanabat. Expectabant omnes quo tandem progressurus, aut quidnam acturus esset; cum repente hominem corripit, atque in foro medio nudari ac deligari, et virgas expedire jubet. Clamabat ille miser se civem esse Romanum, &c." Such is also the picture which he has drawn of Catiline, consisting of an unaccountable mixture of contrary qualities. *Pro. Cæl. c. 5.*

The hypotyposis is frequently used by the poets, and particularly Virgil, who abounds in paintings.

This figure is peculiarly suited for drawing characters, and often affords the finest ornaments in poetry and history, as well as oratory. It is also adapted to move and interest different passions, according to the nature of the subject, and the artful management of the speaker.

HYPOXIS, in *Botany*, from ὑπο, *underneath*, and ἔχει, *sharp*, alluding, as it should seem from the generic description, to the tapering and pointed base of the capsule. *Linn. Gen. 166. Schreb. 221. Willd. Sp. Pl. v. 2. 106. Mart. Mill. Dict. v. 2. Brown. Prodr. Nov. Holl. v. 1. 288. Juss. 55. Lamarek. Illustr. t. 229. Gært. t. 11.*—Class and order, *Hexandria Monogynia. Nat. Ord. Coronarie, Linn. Narcissi, Juss.*

Gen. Ch. Cal. none. Cor. of one petal, superior, in six deep, equal, ovate-oblong, spreading segments; permanent. Stam. Filaments six, very short, capillary; anthers oblong, shorter than the petals. Pist. Germen inferior, turbinate; style thread-shaped, the length of the stamens; stigma three-cleft, bluntish. Peric. Capsule rather oblong, tapering at the base, crowned with the permanent corolla, and composed of three cells, not bursting. Seeds numerous, roundish, "with a lateral beak-like projection." Brown.

Eff. Ch. Corolla superior, permanent, in six deep equal segments. Capsule tapering at the base, without valves. Seeds numerous, with a lateral beak.

Obs. Mr. Brown, like Gærtner, describes the capsule as not separating into valves, which is true of some species, but the whole have not yet, in his opinion, been sufficiently examined.

Undoubted species of *Hypoxis* are,

1. *H. erecta*. *Linn. Sp. Pl. 439. Curt. Mag. t. 710.* A native of dry pastures in North America.
2. *H. sobolifera*. *Jacq. Ic. Rar. t. 372. Curt. Mag. t. 711.* Found at the Cape of Good Hope.
3. *H. serrata*. *Linn. Suppl. 197. Jacq. Ic. Rar. t. 369. Curt. Mag. t. 709.* Found also at the Cape.

These are bulbous herbs, with numerous radical leaves of a lanceolate form, channelled, hairy or smooth. Stalks radical, more or less corymbose. Flowers resembling those of the English *Ornithogalum luteum*, yellow within, green underneath.

Willdenow enumerates 15 species in all, some of which are suspected to be varieties.

H. juncea. *Sm. Spicil. 15. t. 16.* brought by the late Mr. Frazer from Carolina, is supposed to be a starved nar-

row-leaved variety of the *erecta*, the stalks of which are single-flowered.

HYPOZOMA, in *Anatomy*, a name given to such membranes as separate two cavities.

In this sense the mediastinum is an hypozoma.

HYPPASUS of Metapontus, or Crotonia, in *Biography*, is enumerated among the disciples of Pythagoras, late in his life. Theon of Smyrna informs us, that Lafus and Hyppafus seeking celebrity, and in order to avoid the tediousness of calculation by the ratio of numbers, as Pythagoras found the proportions of intervals by means of hammers and strings, his two disciples discovered by means of different portions of water in two vases or glasses of equal size, and in unison with each other; that when one of them was half filled with water, leaving the other empty, the result was the octave 2 to 1. Then filling one vase or glass three parts full of water, and the other half full, they produced the proportion or consonance of the 5th or 3 to 2; and, lastly, four portions of water in one glass, and three in the other, produced the fourth or 4 to 3. The same proportions of consonances were still produced as in the *Syrinx* from reeds of different lengths, or by holes in the flute, or tibia.

This article has been inserted by Padre Martini without telling us that he had proved it to be true by experiment.

HYPPIAS, according to Lucian, was an excellent musician, and the first man of his time for geometry, perspective, and astronomy. He was also a great architect. A description of the magnificent baths of his construction may be read in Lucian.

HYPPOPHORBION, in the *Ancient Musical Instruments*. The Lybians, according to Pollux, invented a kind of flute called hypphorbion, because its sound resembled the acute neighing of a horse.

The hypphorbion was made of a stick of laurel stripped of its bark and pith, and served those who had the care of horses at pasture as a kind of lure or horse-call.

HYPOMACHUS, in the *Ancient Greek Music*. An eminent performer on the flute, perceiving one day at a public exhibition, that one of his disciples of ordinary talents was violently applauded by the common people, silenced him by a blow of his cane; telling him that the greatest proof of his ignorance was the being applauded by the mob.

HYPONAX was the inventor of Iambic verse, according to Athenæus, lib. 14.

HYPSEA, in *Ancient Geography*, a river of Sicily, placed by Ptolemy between Heraclea and Agrigentum, and according to this geographer, discharging itself into the sea to the south of the latter city. It is now called *Belici*; which see.

HYPSELE, an episcopal town of Egypt, W. of the Nile, in a nome of which it was the chief place, called the Hypselites nomos.

HYPsICLES, in *Biography*, an ancient mathematician who flourished in the second century, under the reigns of Marcus Aurelius and Lucius Verus, was a native of Alexandria, and a disciple of Isidorus. He was author of a work entitled "Ἀναφορικός, five de Ascensionibus," which was published at Paris by Mentelius, with the Optics of Heliodorus in 1657. He is supposed to be author of the 14th and 15th books of the "Elements of Geometry," which are commonly attributed to Euclid. *Gen. Biog.*

HYPsICRYMNOS, in *Ancient Geography*, a town in the vicinity of Caucasus, said by Æschylus, in his Prometheus, to have been peopled by Arabs.

HYPHILOGLOSSUS, in *Anatomy*, the same with *basiloglossus*. See *HYOGLOSSUS*.

HYPHILOIDES, from ὑψίλος, and ἰδος, form, the same with *hyoides*; which see.

HYPHISTARII, **HYPHISTARIANS**, ὑψισταριοί, formed from ὑψιστος, highest, in *Ecclésiastical History*, a sect of heretics in the fourth century; thus called from the profession they made of worshipping the most High God.

The doctrine of the Hyphistarians was an assemblage of Paganism, Judaism, and Christianity. They adored the most High God with the Christians; but they also revered fire and lamps with the Heathens; and observed the sabbath, and the distinction of clean and unclean things, with the Jews.

The Hyphistarii bore a near resemblance to the Euclites or Massilians.

HYPHOPHYLLUM, in *Surgery*, an ulcer under a cicatrix or scab.

HYPHUSUS, in *Ancient Geography*, a town of the Peloponnesus, in Arcadia, N. of Megalopolis.

HYPTIS, in *Botany*, a genus named by Jacquin from ὑψιστος, resupinate, because the limb of the corolla is turned, as it were, upon its back.—Schreb. 388. Willd. Sp. Pl. v. 3. 84. Mart. Mill. Dict. v. 2. Jacq. Collect. v. 1. 101. Juss. 449. Lamarec. Dict. v. 3. 184. Illustr. t. 507.—Class and order, *Didynamia Gymnospermia*. Nat. Ord. *Verticillata*, Linn. *Labiata*, Juss.

Gen. Ch. *Cal.* Perianth turbinate, permanent, divided half way down into five, lanceolate, acute, generally equal, erect segments. *Cor.* of one petal, ringent; tube funnel-shaped; throat dilated; limb spreading widely, resupinate; the upper lip (which is reversed as to its situation) cut into three, lateral, ovate, acute segments, the middle one roundish, concave, obtuse; the lower lip (turned uppermost) is divided half way down into two half-ovate, flat, acute segments. *Stam.* Filaments four, awl-shaped, two shorter; anthers twin, dependent. *Pist.* Germen four-cleft; style thread-shaped; stigma bifid or simple. *Peric.* none, the calyx protecting the four seeds.

Ess. Ch. *Calyx* five-toothed. Corolla ringent, reversed, its upper lip bifid, lower one trifid, the middle segment formed like a little pouch. Stamens declined.

1. *H. verticillata*. Willd. n. 1. Jacq. Ic. Rar. v. 1. t. 113.—“Flowers in whorls. Leaves lanceolate, toothed.”—A native of Hispaniola. It flowers in the stores of Europe about November or December.—This *strub* is about ten feet high, with one or two upright stems, which are smooth, brownish-ash-coloured, round and woody; the younger branches square and herbaceous. *Leaves* opposite, on footstalks, lanceolate, acute, unequally serrated, smoothish, from three to six inches long, slightly odorous. *Whorls* on the younger branches, at each pair of leaves, sessile, six-flowered. *Corolla* white, with the segments of the upper lip purplish. *Calyx* a little hispid at the back and at the edges of the segments. *Anthers* pale yellow.

2. *H. capitata*. Willd. n. 2. Jacq. Ic. Rar. v. 1. t. 114.—“Flowers in little stalked heads. Leaves ovate, toothed.”—This is also found in Hispaniola, flowering in December.—*Stem* rather shrubby, about a yard in height, square, brown. *Branches* annual, subdivided, roughish. *Leaves* opposite, on footstalks, veined, unequally serrated, rather hairy on both sides, dark green; the lower ones wrinkled, about seven inches long. *Flower-stalks* bearing numerous white or bluish-coloured flowers collected together into a semi-globular head. The tube of the corolla is a little hairy on its outside, especially on the back of the helmet. Whole plant inodorous.

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Willdenow refers *Clinopodium rugosum*, Linn. Sp. Pl. 882. to this genus, as well as *Clinopodium chamadrys*, Vahl. Symb. p. 3. 77; the former, under the name of *Hyptis radiata*, and the latter of *H. Chamadrys*.

HYPULUS, in *Surgery*, an ulcer under a cicatrix.

HYRAX, in *Zoology*, a genus of mammalia in the order Glires. The essential character consists in having two broad and distant fore-teeth in the upper jaw, in the lower jaw four, of a flattened form, broad, notched, and placed contiguous; grinders large, tuberculated, and ten in number (or sometimes eight); fore-feet four-toed; hind-feet three-toed; tail and clavicle none.

In the general aspect this animal bears some resemblance to the guinea-pig; the length from the muzzle to the end of the rump is about fifteen inches. The head is short, the snout blunt, blackish, and without hair; the ears oval, open, brown, and woolly; the body thick and short, and the belly prominent; the hair of the fur woolly, above or on the back brownish, mixed with longer black and a few bristles; the colour becoming grey in descending on the sides, and being towards the abdomen whitish. The limbs appear very short, the shoulders and thighs being concealed under the fur. The anterior feet are four-lobed, and each lobe is armed with a flat rounded nail; the posterior feet are only two-lobed, but have besides a toe which is furnished with a long sharp claw.

According to Schreber there are two species of the hyrax genus, one of which is found at the Cape, the other an inhabitant of Syria. In this opinion he is followed by Gmelin, who thus describes the two presumed species under the names of *Capensis* and *Syriacus*, “*Capensis*; palmarum unguibus planis plantarum unico subulato,”—and “*Syriacus*; pedibus unguiculatis.” Schreber. The species *capensis* is that above described, and is the same as the *Cavia capensis* of Erxleben, Marmotte du Cap of Buffon, and Cape cavy of Pennant. That called *Syriacus* is the animal mentioned by Bruce under the name of the “Lamb of Israel,” and which that author concludes to be the Saphan of holy writ; it seems to differ principally from the former in being about two inches longer, the body more elongated in proportion, the muzzle longer, and the fur reddish-grey. The difference between these two animals is confessedly inconsiderable, inasmuch, perhaps, as to justify an idea that they may not be specifically distinct; Sonnini is convinced they are the same, and confidently asserts it to be the only species of this genus known.

At the Cape this animal is called by the natives *klip-daas*, or rock badger, but as its haunts are the more retired, and inaccessible parts of the mountains, its habits in a natural state are little known; it is said to form its retreat in the hollows of rocks and caverns, where it makes a litter composed of moss and leaves that occasionally serves to afford it rest or nourishment, as herbage constitutes its natural food. Some writers, and among the number Dr. Pallas, seem to believe this animal forms burrows in the earth like the marmot and the badger, but this appears improbable when we consider the flat and rounded form, as well as weakness of the toe-nails, the structure of which is very different from those of animals which we well know are destined by nature to scratch and burrow in the earth, the solitary toe nail on each of the posterior feet excepted, and this, it is supposed, is principally useful to the animal in assisting it to remove from the skin some portion of those numerous pediculi with which it is infested and tormented. The flesh of the hyrax is esteemed by the inhabitants of the Cape good eating; the Hottentots endeavour also to discover its haunts for another reason as well as that of its capture, for they collect in the

places of its retreat a particular substance supposed by them to be deposited from the urine of this animal after long exposure to the air; and which they maintain to be a sovereign remedy in many disorders; the colour of this substance when dry is blackish, and the smell offensive in the extreme.

When domesticated the Cape hyrax becomes a familiar and interesting animal, and one susceptible of attachment. If called by any name by which it is accustomed to be distinguished, it replies in a short but sharp and piercing cry, and approaches those it knows in confidence. It dreads cold, and places itself close to the fire when it can conveniently. The disposition of this animal is remarkably timid. Those transported from the Cape into European climates have been known to subsist on bread, potatoes, fruits, and various other vegetables.

HYRCAN I., JOHN, in *Biography*, high-priest and prince of the Jews, was the son of Simon Maccabeus. On the invasion of Judea by the Syrian governor in the year B.C. 139, he and his brother Judas led a body of troops, who entirely defeated the invaders. After his father's murder by his son-in-law, Ptolemy, he went to Jerusalem, where he was declared Simon's successor in the priesthood and sovereignty. This was in the year 135. Antiochus Sidetes laid siege to Jerusalem, but was induced to grant a peace to the Jews upon condition of their dismantling the city, and the payment of a large sum of money. Hyrcan afterwards made an alliance of friendship with Antiochus, and accompanied him in his war against Phraates, king of Parthia, in which he did much service, and after the death of Antiochus, he took advantage of the civil dissensions prevailing in Syria, made himself master of several neighbouring towns, and entirely shook off all dependence on that crown. He afterwards became the aggressor, and made considerable conquests for his country, till at length he extended his dominion not only over Palestine, but also over the provinces of Samaria and Galilee, and the Jewish state appeared with greater lustre than under any of his predecessors since the captivity. He was zealous for his religion, and attached to the sect of Pharisees, but a quarrel with that haughty and powerful body embittered the latter part of his life. He died in the year 107, and was succeeded by Aristobulus.

HYRCAN II., high-priest and king of the Jews, was eldest son of Alexander Jannæus; but at the death of his father, his mother Alexandra took the reins of government, and allotted to him the succession of the priesthood. On her decease Hyrcan was declared king, but being of a quiet and unenterprising disposition, he was quickly dispossessed of his dignities, and reduced to a private station. He was afterwards persuaded by Antipater to accompany him to Arabia, in the vain hope of obtaining the assistance of king Aretas to restore him. The Romans, gained over by Aristobulus, the brother of Hyrcan, defeated Aretas, and the two brothers at length pleaded their cause in person before Pompey. In the year 63 B.C. Hyrcan was restored to his pontifical office with the title of prince, but he was divested of royalty, and made tributary to Pompey. He lived several years under the protection of the Romans; and was very much favoured by Cæsar, but at length he fell into the hand of his nephew Antigonus, who cut off his ears, in order to incapacitate him for the priesthood. He was then carried into Parthia, where he was well treated, till he complied with an invitation from Herod to return to Jerusalem, and resume the pontificate. His honours were of short duration, being beheaded by the tyrant when he was in the eightieth year of his age. Josephus. Univer. Hist.

HYRCANIA, in *Ancient Geography*, a large country of Asia, situated to the south of the eastern part of the Caspian

sea, hence called the Hyrcanian sea. It had on the W. Media, on the S. Parthia, and on the E. Margiana. This country was mountainous, covered with forests, and inaccessible to cavalry. It was separated from Parthia by mount Corone. According to Ptolemy the Maxaræ, and S. of them the Chrindi, and also the Arabeni, were situated towards the sea. Its towns were Barange, Adrapfa, Casape, Aberbina, Amarusa, Sinica, Hyrcania the metropolis, Sale or Sacæ, Asmura or Asmurna, and Mausoca.

It is now well known that Timotheus, the Nestorian pontiff, who had been raised to that dignity A.D. 778, converted to the Christian faith by the ministry of Subchal Jesu, whom he had consecrated bishop, first the Gelæ and Dailamites, by whom a part of Hyrcania was inhabited; and afterwards, by the labours of other missionaries, the rest of the nations, which had formed settlements in Hyrcania, Bactria, Margiana, and Sogdia. It is also certain, that Christianity enjoyed in these vast regions, notwithstanding the violent attacks of the Mahometans, to which it was sometimes exposed, the advantages of a firm and solid establishment for a long course of ages; while the bishops, by whose ministry it was propagated and supported, were all consecrated by the sole authority of the Nestorian pontiff.

HYRCANIA, or *Hyrcanus Campus*, a country of Asia Minor.

HYRCANIA, a country of Asia, S. of Babylonia; inhabited by the Hyrcanii, who, as well as the Sacs and Cadusians, occupied that district which lay between the Tigris and the Euphrates. These people were powerful enemies of the king of Assyria; and an alliance with them was sought for by Cyrus in his war against this prince. He formed of these people 2000 cavalry, and a very considerable body of infantry; and having dispossessed the Assyrians of their garisons on the frontier of the country, Cyrus assigned them to his new allies. The Hyrcanians, who inhabited Hyrcania, on the coast of the Caspian sea, were a ferocious people.

HYRGALE, a town of Asia, in Phrygia Salutaris; situated on a river towards the northern part of this province. The chief magistrate bore the title of Archon. The worship of Cybele was established in this city; but abandoned on the introduction of Christianity. Its bishop assisted at the council of Chalcedon, in 451.

HYRIA, a town built by the Cretans, who assumed the name of Japyges Messapii. It was situated in the interior of the country between Tarentum and Brundisium. Strabo calls it Ouria, and the Latins Uria. It is now Dria.

HYRYNSELMI, in *Geography*, a town of Sweden, in the government of Ulea; 34 miles N.E. of Ulea.

HYS, a town of the Arabian Irak, on the Euphrates; 120 miles S. of Bagdad.

HYSSOP, in *Botany and Gardening*. See **HYSSOPUS**.

HYSSOP, *Common*, *Hyssopus officinalis*, in the *Materia Medica*, is a native of Siberia, and the mountainous parts of Austria, and flowers from June till September. The hyssop mentioned in the Old Testament is not supposed to be this plant, which is neither the *esof* of the Hebrews, nor the *υσσοπος* of the Greeks. It was first cultivated in England by Gerarde in 1596, and is now extremely common in our gardens. The leaves of hyssop have an aromatic smell, and a bitterish, moderately warm taste. They give out their active matter both to water and rectified spirit; the watery infusions are of a brownish or greenish yellow, and the spirituous tinctures of a blackish green colour. On inspissating the latter, the remaining extract retains its flavour, is bitterish, and very warm, and discovers a penetrating pungency, resembling that of camphor. Water, distilled from the fresh herb, is found pretty strongly impregnated with its flavour.

An essential oil is obtained from the distillation, which rises to the surface, to the quantity of about an ounce from six pounds of the leaves: this oil is very pungent, and in smell exactly resembles the hyssop.

The stimulating quality of hyssop is ascribed to the quantity of essential oil which it contains; and with a view to its aromatic and stimulant effects, Bergius recommends it as an emmenagogue and antihysterical; but it is chiefly employed as a pectoral, and has been long thought an useful medicine in humoral asthma, coughs, and catarrhal affections: for this purpose, an infusion of the leaves, sweetened with honey or sugar, and drank as tea, is recommended by Lewis.

Hyssop is greatly commended in cases of bruises from falls, blows, &c. used externally by way of fomentations or cataplasms, or only a little bundle of the plant sewed up in a linen rag, and applied to the part. Ray gives an account from Mr. Boyle, of a violent contusion of the thigh, from a kick of a horse, which was happily cured by this herb, boiled and applied as a cataplasm. He tells us, the violent pain was almost instantly removed, and the very mark and blackness taken off in a few hours. It is also recommended as a vermifuge by Rosenstein. Woodv. Mat. Med.

Hyssop was commonly made use of, as we learn from the scriptures, in purification. Thus God commanded the Hebrews when they came out of Egypt, to take a bunch of hyssop, to dip it in the blood of the paschal-lamb, and sprinkle the lintel and two side-posts with it. (Exod. xii. v. 22.) Sometimes a little wool was added to it of a scarlet colour. So in the purification of lepers, a bunch, composed of hyssop, the branches of cedar, and red wood, was dipped in water, mingled with the blood of a bird, and with this the leper was sprinkled. (Levit. xiv. v. 4.) David also alludes to these ceremonial cleansings in his 51st Psalm, v. 7th. "Purge me with hyssop, and I shall be clean."—Cruden observes it is very probable that this plant grows to a great height in Judea, since it is said in the Gospel, that the soldiers having filled a sponge with vinegar, they put it upon a stick of hyssop and presented it to our Saviour's mouth, who was then upon the cross.

HYSSOP, *Hedge*, in *Botany* and the *Materia Medica*. See GRATIOLA.

HYSSOP, *Mountain*. See THYMBRA.

HYSSOPIC ART, a name which Paracelsus gave to chemistry, considered as the art which purifies metals, minerals, &c. in allusion to that text in the Psalms, "Purge me with hyssop, and I shall be clean."

HYSSOPUS, in *Botany*, generally taken for ἵσσωπος of Dioscorides, derived by some from ἵσσω, to rain, or to be showered on, and ὤψω, the countenance, because the dust of this plant, when dried and pulverized, was used in the Grecian sacrifices for sprinkling the head and eyes, as the Catholics now use holy water for the purpose of *crossing* themselves, and this operation was supposed to cleanse the impurities of those over whom hyssop was sprinkled. Professor Martyn more justly deduces the word from the Hebrew, *Esof*. Linn. Gen. 289. Schreb. 385. Willd. Sp. Pl. v. 3. 47. Mart. Mill. Dict. v. 2. Ait. Hort. Kew. v. 2. 283. Juss. 113. Tournef. t. 95. Lamarck Dict. v. 3. 185. Illustr. t. 502.—Class and order, *Didymia Gymnospermia*. Nat. Ord. *Veriticillate*, Linn. *Labiata*, Juss.

Gen. Ch. *Cal.* Perianth of one leaf, cylindrical, oblong, striated, acutely five-toothed, permanent. *Cor.* of one petal, ringent; tube cylindrical, slender, as long as the calyx; throat inclined; upper lip straight, flat, short, roundish, emarginate; lower lip divided into three segments, the lateral ones shorter and obtuse; the middle one crenate, orbiculate, acute, with distant lobes. *Stam.* Filaments four, erect, longer

than the corolla, distant; the two upper ones shorter, but the two longer ones nearer to the lower lip; anthers simple. *Pist.* Germen four-cleft; style thread-shaped, under the upper lip, and of the same length; stigma bifid. *Peric.* none; the calyx containing the seeds, which are four in number, and subovate.

Eff. Ch. Corolla with a small middle crenate segment in its lower lip. Stamens straight, distant.

1. *H. officinalis*. Common Hyssop. Linn. Sp. Pl. 796. Jacq. Austr. t. 254.—"Spikes all leaning in the same direction. Leaves lanceolate."—A native of the south of Europe, flowering from June to September. *Root* woody, half an inch thick. *Stem* about 18 inches high, at first square, then round. Leaves sessile, the lower ones in pairs, narrow, smooth, entire, like those of lavender, but shorter. *Flowers* in whorls, from the bosoms of the leaves, continued into a spike, of a blue colour, but varying to red and white. The whole plant has a strong aromatic scent, and was cultivated in this country by Gerarde in the year 1596.

2. *H. Lophanthus*. Mint-leaved Hyssop. Linn. Sp. Pl. 796. Jacq. Hort. Vind. v. 2. t. 182.—"Flowers reflexate, lower stamens shorter than the corolla. Leaves cordate."—Native of Siberia, flowering in August and September. *Root* perennial, fibrous, sending out many square stalks, which divide into branches. *Leaves* heart-shaped, rough, pale on the under side. *Clusters* of four or five purple flowers are produced at each joint of the stem. The tube of the corolla is longer than the calyx.

3. *H. nepetoides*. Square-stalked Hyssop. Linn. Sp. Pl. 796. Jacq. Hort. Vind. v. 1. t. 69.—Stem sharply quadrangular. Flowers in close whorls. Leaves ovate.—Native of Virginia and Canada, flowering from August to October.—*Root* perennial. *Stem* erect, about four feet high. *Leaves* obliquely cordate, or ovate, serrated, acute, on short footstalks. *Flowers* yellow, in thick close spikes four or five inches long; upper lip of the corolla divided into two roundish segments. *Seeds* brown.

There is a variety of this species with purple stalks and flowers, the leaves on longer footstalks, and the spikes of flowers denser, but Willdenow has made a new species of it, we presume, under the name of *H. scrophularifolius*. Vide Willd. Sp. Pl. v. 3. 48.

HYSSOPUS, in *Gardening*, affords a plant of the low under-shrubby kind; of which the species cultivated is the common hyssop (*H. officinalis*).

There are several varieties, as the blue-flowered, the white-flowered, the red-flowered, the long-spiked, with deep blue flowers, the curled-leaved, and the striped-leaved.

Method of Culture.—This is a kind of plant which is capable of being raised by means of seeds, cuttings, and slips.

The seeds should be sown in a bed or border of light mould, prepared for the purpose, in the spring season, being well raked in. When the plants appear, they should be thinned where they stand too close, and as soon as they are three or four inches in height, be planted out in the places where they are to grow. In the forming of edgings of this plant, the seeds may be deposited in drills run along the edges of the borders, &c. where they are to grow, being covered in about half an inch in depth.

In the two latter modes, some of the more robust side-shoots should be cut or slipped off, and planted in a shady border, or other place, in the latter part of the summer, at the distance of five or six inches from each other, water being immediately given, and occasionally repeated. The plants soon take root, when in the autumn they may be set out where they are to grow.

It is the common blue-flowered hyssop that is the kind mostly made use of, and which is commonly cultivated either in close rows, or by way of edging to beds and other parts, in which latter case the plants are kept regular and in order, by annual clippings. The rows should be about fifteen or eighteen inches apart where that method is employed, and nearly at an equal distance between the plants in the rows.

They are the young leafy shoots and flower-spikes which are usually employed, being cut as they are wanted. And the flower stems may be cut over during the summer, and be tied up in bunches for use.

Plants of the several different varieties may likewise be planted out separately, in the borders, clumps, and other parts of the pleasure grounds, in order to form small bushy plants for the purpose of ornament.

HYSTERA, a term used by some of the old writers in medicine to express the fecundines.

HYSTERALGIA, in *Medicine*, from the Greek *ὑστέρηα*, signifying the *womb* or *uterus*, and *άλγος*, *pain*, a term used by the nosologists to denote all the slow painful disorders of that organ.

Sauvages describes sixteen species of hysteralgia, distinguishing them by the various circumstances by which the pain is excited. Thus he includes, under this genus, the pains arising from *prolapsus* of the uterus (Spec. 1. H. *ab hysteroptosi*); from *hernia* of the same viscus (2. H. *ab hysteroccele*); from *dysmenorrhœa*, or painful menstruation (3. H. *à menostasia*); from cancer of the uterus (4. H. *cancerosa*); from ulceration and scirrhus (5 and 6. H. *ulcerosa*, *scirrhosa*); from pruritus in the uterus (7. H. *pruriginosa*); from a bony substance in it (8. H. *ab offe*. See Hody, in *Philos. Transact.* vol. ix. p. 191.); from intermitting fever (9. H. *febricosa*, Morton, *Pyretologia*, p. 92.); from hysterical affections (10. H. *vaporosa*); from abscesses succeeding to inflammation of the uterus (11. H. *ex abscessu*. See HYSTERITIS); from the gradual distention of the uterus in pregnancy (12. H. *impregnatarum*); from suppression of the milk (13. H. *lactea*); from the natural contractions of the uterus after delivery, during the discharge of the *lochia*, commonly called *after-pains* (14. H. *lochialis*); from a supposed translocation of the milk to the hypogastric region (15. H. *ab sparganosi*); and, lastly, from calculous concretions formed in the uterus (16. H. *calculosa*). See his *Nosol. Meth. Clafs. vii. Ord. 4.* It will be observed, that some of these varieties of hysteralgia, such as those connected with the enlargement of the gravid uterus (sp. 12.) and the after-pains (sp. 14.), can scarcely be considered as diseases, unless they occur in an unusual degree of severity: while, on the other hand, some of them are extremely rare; such as the case described by Hody (sp. 8.), and the variety occasioned by the presence of calculi. The first and second species, depending upon prolapsus of the vagina and hernia, can only be relieved by mechanical means, by which the uterus may be replaced in its natural situation. (See *PROLAPSUS Uteri*, and *HYSTEROCELE*.) Ulceration and cancer of the womb constitute the most painful and distressing diseases to which the female frame is subject, and will be treated of under their proper heads. See *WOMB*.

But, in addition to these instances of hysteralgia, there are cases in which pain, referred to the uterus and its appendages, is a leading symptom, and cannot be ascribed exactly to any of the causes above-mentioned. Such pains sometimes come on a few weeks after delivery in married women, and are often dated from the last child-birth. They are most commonly accompanied by some irregularity in the menstrual discharge, generally by an increase of it, or by alternations of a bloody, with a thinner, less coloured, and

offensive evacuation. The symptoms vary a little in different cases, apparently according as the uterus itself, or its particular appendages are disordered. In general the patient complains of pains in the loins, extending round the margin of the pelvis to the groin, on one or both sides, and shooting down the thigh to the knee, or, in more severe cases, even to the foot. Sometimes the pain is more strictly referred to the uterus itself, or its neck, and the loins are scarcely affected; and sometimes it is fixed, in one side, above the ilium, as if seated in the ovarium. In one case we have seen the disease confined apparently to the ovarium and ligaments of one side, in which there was great soreness of the part, where the round ligament passes to the pubes. The stomach is frequently disordered by sympathy, and the patient complains of nausea, flatulence, and other symptoms of indigestion; and occasionally some degree of febrile action attends these complaints.

These forms of hysteralgia are by no means unfrequent, especially among the poor; and seem to originate often in some degree of chronic inflammation, and diseased secretion in the uterus, consequent on the irritations of child-birth, or produced by causes suddenly interrupting or deranging the lochial and menstrual discharges. Sometimes it is probable that they are merely the signs of incipient scirrhus.

There are no medicines which operate specifically upon the uterus. When there is clearly a feverishness connected with hysteralgia, laxatives and diaphoretics are the most useful medicines, the pain being at the same time soothed by conium, opium, humulus, or other anodynes. The tincture of the hop, or humulus lupulus of Linnæus, has sometimes appeared to afford ease in these cases, when the other narcotics had failed; but perhaps this observation is applicable to any medicine of this class. When the hysteralgia is connected with great weakness and lowness of spirits, and a considerable leucorrhœa, cordials and tonics, combined with the anodynes just mentioned, must be administered. In the case attended with pain and soreness in the course of the round ligament, the application of leeches to the groin, and the use of saline laxatives, afforded relief. In all these cases rest, or abstinence from all motion, especially from walking, seem to be beneficial; although perhaps negatively, by allowing the vessels of the part to recover their natural actions, which the erect posture and the irritation of walking tend to prevent. See *Edin. Med. and Surg. Journal*, vol. iv. p. 241.

In the volume of the *Journal*, just quoted, a case of hysteralgia is related, which continued, without one day's cessation, for twenty-six years, yet no derangement in the structure of the uterus, sufficient to account for it, was discovered after death. See p. 168.

HYSTERIA, HYSTERICUS, or *Hysterical Affection*, from *ὑστέρηα*, the *uterus*, or *womb*, implies literally the *uterine disease*; it denotes a state of constitution, in which a variety of spasmodic, convulsive, and painful affections occur, together with extreme variability of the spirits, and a frequent sense of suffocation, from a ball rising from the abdomen to the throat, which has been called the *globus hystericus*, and considered by some as the essential characteristic of the disease.

Other appellations have been given to the disease, with reference to its origin from the womb, especially to the convulsive paroxysms, or *hysteric fits*, which have been called *suffocation of the womb*, *suffocatio uteri*, *fits of the mother*, &c. The appellation of *vapours* has also been applied to this disease in females, as well as to the hypochondriasis in men; and from a similar notion, that it is occasioned by vapours, ascending from the *uterus*, and affecting the brain, lungs, &c.;

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&c. ; as vapours arising from the stomach, liver and spleen, were supposed to give rise to hypochondriasis.

All medical writers have admitted the difficulty of describing, in a concise manner, the various forms of this disorder, which exhibits such a number of phenomena, which rapidly appear and change, that it imitates almost every disease of the nervous class, and even several of the more fixed and organic diseases. "Dies me deficeret," says Sydenham, "si omnia, quæ adfectus hystericos gravant, symptomata enumerare velim; tam diversa atque ad invicem contraria specie variantia, quam nec Proteus lufit unquam, nec coloratus spectatur chamæleon." (Dissertatio Epitolaris ad Gul. Cole.) The most complete form of *hysteria*, however, is seen in the paroxysms, or *fits*, which occur at various periods, without any regularity. These are commonly preceded by a sense of lassitude, coldness of the feet, and a copious discharge of pale limpid urine: often by pain in the head, loins, or stomach; which latter organ, as the fits commence, is sometimes affected with vomiting. The paroxysms commonly begin by some pain and fulness felt in the left side of the belly. From this a ball seems to move, with a grumbling noise into the other parts of the belly; and, making as it were various convolutions there, seems to move into the stomach, and more distinctly still rises up to the top of the gullet, where it remains for some time, and by its pressure upon the larynx gives a sense of suffocation. There is occasionally much difficulty of breathing, and a palpitation of the heart at the onset. By the time the disease has proceeded thus far, the patient is affected with a stupor and insensibility, while at the same time the body is agitated with various convulsions: the trunk of the body is writhed to and fro, and the limbs are variously agitated; commonly the convulsive motion of one arm and hand, is that of beating with the closed fist upon the breast very violently and repeatedly. The whole of the belly, and particularly the navel, is often drawn strongly inwards; sometimes there is a violent working, or alternate rising and falling of the belly, attended with considerable noise. The *sphincter ani*, during the fit, is sometimes so firmly constricted as not to admit a small glyster-pipe, and there is at the same time an entire suppression of urine. This state continues for some time, with some remissions and renewals of the convulsive motions; but they at length cease, leaving the patient in a stupid and seemingly sleeping state. More or less suddenly, and frequently with repeated sighing and sobbing, together with a murmuring noise in the belly, the patient returns to the exercise of sense and motion, but generally without any recollection of the several circumstances that had taken place during the fit.

Such fits are very liable to recur from time to time, and during the intervals the patients are subject to involuntary motions, to fits of laughing and crying, with sudden transitions from one to the other; while sometimes false perceptions and some degree of delirium also occur, as well as all the various incongruities of the disease to which we alluded above. The preceding account is that of the most common form of the *hysterical paroxysm*; but this is considerably varied in different persons, and even in the same person at different times. It differs chiefly by having more or fewer of the circumstances above-mentioned, by the greater or less degree of violence of these, and by the different duration of the whole fit. See Cullen, First Lines, par. 1514, et seq.

Sydenham has enumerated the principal varieties of form, which the *irregular hysteria*, as it has been termed, assumes; or, to use perhaps a more correct expression, the principal disorders of the functions, which take place in the intervals of the paroxysms, or occur where the paroxysms do not

appear. "The disease," he says, "is not more remarkable for its frequency, than for the numerous forms under which it appears, resembling most of the distempers wherewith mankind are afflicted. For in whatever part of the body it be seated, it immediately produces such symptoms as are peculiar to that part; so that unless the physician be a person of judgment and penetration, he will be mistaken, and suppose such symptoms to arise from some essential disease of this or that particular organ, and not from the *hysterical passion*." (Loc. cit.) Dr. Ferriar, in his chapter on the "conversion of diseases," has remarked that the conversions of hysteria are very common sources of error to young practitioners, and sometimes deceive even the most experienced. "Whoever would present us with a good book," he says, "on the *fallacy of symptoms*, which is greatly wanted, must be completely master of this unaccountable disease." Ferriar, Med. Histories and Reflections, vol. ii. See also *CONVERSION of Diseases*, where the substance of that ingenious dissertation will be found.

"When the hysterical disposition is set in motion, the same author observes, it is not uncommon to find many of the different viscera attacked by it in turns, and the diseases peculiar to each counterfeited with much exactness. I have seen symptoms of paralysis, jaundice, palpitation, and nephritis, succeed each other rapidly in the same patient, while some of the characteristic marks of hysteria have been discernible, and where the unity of the disease was proved, by the disappearance of all menacing affections, on the approach of regular fits. In one case, the bowels were attacked, and the symptoms of *enteritis* were so precisely imitated, as to give much alarm for the patient's safety. I suspected the real nature of the disease, from observing that the pulse was soft and full, that the evacuations were natural, and that her spirits were agitated, even to involuntary emotions, by slight causes. This case terminated successfully, on the accession of clear hysterical symptoms. Several years ago, I attended an elderly lady, for a complaint which seemed to vibrate between apoplexy and palsy: after lying for several weeks in a state which afforded little hope of amendment, she was affected with involuntary sobbing and weeping; the complaints in her head and limbs were converted into hysterical convulsions, and she recovered completely.

"It is very common to meet with syncope, or palpitations of the heart and great vessels, accompanied with a soporific depression, or extreme dejection of strength and spirits, and converted, after deep sighing or discharge of tears, into the hysterical paroxysm. In these cases, the pulse is sometimes full and regular during the most alarming appearance of sinking, and sometimes variable to such a degree, as to exclude all conjecture, excepting that of an hysterical origin.

"I have met with several cases of hysterical hæmoptœ, in which the quantity of blood evacuated was very considerable; six or eight ounces were sometimes spit up daily, for a fortnight or three weeks successively. Most of the usual symptoms attended, which denote danger in this complaint, when it arises from other causes; but the equal moderate state of the pulse, and the appearance of some degree of *globus hystericus*, seemed to determine the nature of the complaint; a conversion accordingly soon took place to the ordinary hysterical paroxysm, and no bad consequence followed the hæmorrhage from the lungs.

"In all similar instances, the supervening hysterical paroxysm puts a favourable termination to the irregular appearances." Loc. cit.

Sydenham's account of these irregularities differs, in some respects, from the one just detailed; especially inasmuch as

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he does not generally notice the solution of the local complaint by the occurrence of the regular hysterical paroxysm, which he mentions only as one of the forms which the disease assumes. He seems to consider the copious discharge of limpid urine, as the chief characteristic of the hysterical attacks, which counterfeit other diseases; (*Opera Univerſa*, Edit. Lugd. Bat. 1726, p. 392. 394. 570. Wallis's *Translat.* p. 111. 114. and 399, vol. ii.) but he looks upon this symptom as belonging in common to hysteria in women, and to hypochondriasis in men.

Among the diseases which he has observed to be counterfeited by hysteria, are *apoplexy*, when it attacks the head, which terminates in *hemiplegia*, and is chiefly seen in lying-in-women, after difficult parturition, attended with great hæmorrhage: the *clavus hystericus*, or acute pain in one small spot in the head, which is often accompanied by vomiting, and palpitation of the heart; these are most frequent in delicate and chlorotic girls: pain in the stomach, colic, with porraceous vomiting, resembling the *iliac passion*, terminating in *jaundice*, and always accompanied by great despondency; chiefly attacking women of lax fibre, who have suffered severe labours from large children: pains in the kidneys and bladder, like *fits of the stone*, with *suppression of urine*; occurring in women much debilitated by previous hysterical fits, and in a bad state of health; who are also liable to long-continued vomiting and *diarrhœa*, without pain, discharging green bile. He likewise remarks, that the disease is liable to attack the external parts and muscular flesh, sometimes causing pain, sometimes swelling, in the throat, shoulders, hands, thighs, and legs, more especially in the last; which swelling, however, is to be distinguished from œdema, by being greatest in a morning, by leaving no pit after pressure with the finger, and by commonly affecting only one leg; though its external appearance much resembles that of œdema. But the most severe of those pains, is that which affects the back. He adds, that these pains have this circumstance in common, that they all leave the parts extremely fore and tender, as if they had been severely beaten, so that they cannot bear the touch for some time; and that these pains and other symptoms are all preceded by a death-like coldness of the external parts. *Diff. Epitolaris*.

To conclude, the regular hysterical paroxysm sometimes alternates with the *cataleptic* state, in which the patient remains fixed in one insensible position (see *CATALEPSY*); sometimes with a loss of voice; with *carus*; and with various states of mental derangement, as *nymphomania*, *fatuity*, &c.

Causes of Hysteria.—The *predisposing* cause of this disease appears to consist chiefly in a certain mobility of the nervous system, which is almost peculiar to the female constitution, the "*varium et mutabile, fœmina*," more especially to females of a sanguine temperament, and of a plethoric and irritable habit. The disease, therefore, is very rarely seen in the male sex, and never in the same exquisite degree in which it occurs in women. In the latter, it appears most generally from the age of puberty to that of thirty-five or forty years; very seldom before the first or after the last of those periods; but at all ages, the time at which it most readily occurs is that of the menstrual period, and it is often obviously connected with some irregularity or deficiency in the uterine functions; as with suppressed or difficult menstruation, pain in the uterus, &c. It affects barren women, more than those who are breeding, and therefore frequently young widows. It occurs especially in those females who are liable to nymphomania; and the nosologists have properly enough marked one of the varieties of this disease by

the title of *hysteria libidinosa*. It is more frequent in cold than in hot climates.

The *exciting* causes of hysteria, which readily operate on a constitution pre-disposed to the complaint, are especially all violent passions, and every considerable emotion of the mind, particularly those brought on by surprise. Some females, liable to this disease, acquire such a degree of sensibility, as to be strongly affected by every impression, however slight, that comes upon them suddenly and by surprise; even by disagreeable odours, sights, &c. An indolent life and a luxurious manner of living tend both to augment the pre-disposition to the disease, and to call it into action. Any irritation, especially in the alimentary canal or in the uterus, will excite hysteria; whence it often accompanies a state of inanition, or emptiness of the stomach from long fasting (*Sydenham, loc. cit.*); the use of a strong emetic or purgative (*idem.*); painful menstruation; and an immoderate discharge of the menses, either in child-bed, or at other times. It is also occasionally excited by a prolapsus of the uterus, though more rarely; and it has been said to follow the repression or metastasis of chronic cutaneous eruptions, intermittent fevers, and other acute diseases.

As to the *proximate* cause of the disease, it may be remarked, that its paroxysms appear to begin by a convulsive and spasmodic affection of the alimentary canal, which afterwards influences the brain and a great part of the nervous system. But, as Dr. Cullen observes, "although the disease appears to begin in the alimentary canal, yet the connection which the paroxysms so often have with the menstrual flux, and with the diseases that depend on the state of the genitals, shews that physicians have at all times judged rightly in considering this disease as an affection of the uterus and other parts of the genital system." Par. 1520.

He confesses himself, however, unable to explain in what manner the uterus and the ovaria are affected in the disease; how the affection of these is communicated with particular circumstances to the alimentary canal; or how the affection of this part, rising upwards, affects the brain, so as to occasion the particular convulsions which take place. To say that there is a great sympathy between the uterine and digestive organs, is but to express the fact in other terms; and with this general expression we must be content at present.

Sydenham refers all the phenomena to the irregular motions of the animal spirits; which is a still more hypothetical expression of the fact, because the very existence of such spirits is a mere assumption, which a better investigation has rejected as altogether unfounded. He denies that the disease is to be ascribed "to the ascent of malignant vapours from the corrupted semen or menstruous blood in the uterus to the parts affected, as some authors have asserted; or, as others affirm, to a latent depravity of the juices, or a collection of acrid humours." And his reason is very conclusive against the humoral pathology: "for," he says, "that the cause of the disease does not lie concealed in any morbid matter, appears evident from this single instance. If a slender weak woman, otherwise usually healthy, happens, by mistake, to be debilitated and exhausted by a strong vomit or purgative, she will be infallibly seized with some one of the concomitant symptoms of this disease; which would, by these means, rather have been carried off, than occasioned, if the cause of it had been any present humour. The same may be said of too great loss of blood, whether it be taken away by bleeding, flows immoderately after delivery, or be diminished by inanition and too long abstinence from flesh; all which would rather be preventive than productive of hysterical diseases, if the cause of these consisted in
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some kind of morbid matter; whereas, on the contrary, they are never more certainly occasioned than by these evacuations." Nevertheless, Sydenham was unable to banish completely his prejudices in favour of the humoral pathology, although refuting it thus satisfactorily; and therefore, he maintains that "the irregular motion of the spirits generates putrid humours in the body;" and that these corrupt juices, collected in the blood, are sent to various organs, producing chlorosis, and other cachectic diseases. *Loc. cit.*

It would be quite superfluous to enter into any discussion respecting the absurd notions of the ancients, who attributed the disease either to the ascent of vapours from the uterus, producing the sense of suffocation and convulsions, or to the ascent of the uterus itself, which was supposed to roam about the abdomen at times, and, by pressing the diaphragm upwards, to give rise to the symptoms. The latter opinion seems to have been held both by the philosophers and physicians; for Hippocrates (*de Natura Mulierum*) and Plato (*Timæus*) have expressed the same notion; the latter comparing the uterus to an animal, desirous of impregnation, and wandering through the whole body. Galen's knowledge of anatomy enabled him to refute these absurdities (*de locis affect. cap. 5.*); and therefore the notion of rising vapours was adopted, and it continued to be espoused for a considerable period after the restoration of learning. For a statement of the arguments, the reader may consult Sennert. *Pract. lib. i. sect. 1. cap. 14. and lib. iv. part 2. sect. 3. cap. 4.* the works of Fernel, &c.

Of the Diagnosis.—The hysterical paroxysm scarcely resembles any other affection of the body, except occasionally the paroxysm of *epilepsy*; but in epilepsy, the convulsive motions are generally much more violent, and the insensibility more complete; there is foaming at the mouth, and a state of coma or profound sleep follows the fit; on the contrary, there is no *globus* rising into the throat, no agitation of the abdomen, no screaming, laughing, or crying, nor any copious discharge of limpid urine, as is common in the commencement of the hysterical fit.

The disease in general has been considered by many physicians as the same with hypochondriasis, the latter term being appropriated to it, when occurring in the male sex, and hysteria when it is found in the female. But this seems to be improper, if the symptoms of the two diseases be accurately examined. They may have, indeed, some symptoms in common; but for the most part they differ widely. Spasmodic affections occur in both; but they are generally local, confined to particular parts, and much less severe in hypochondriasis, as well as much less frequent than in hysteria. Indigestion occasionally affects hysterical patients; but they are often entirely free from it, which never happens in hypochondriacs. But the diseases are still more certainly distinguished by the temperament which they usually attack, and by the time of life at which they appear to be most exquisitely formed: youth and a sanguine temperament being most liable to hysteria, while the middle or advanced periods of life, and a melancholic temperament, are peculiarly favourable to hypochondriasis. Nor are they limited to the respective sexes; for the male sex, when youth and the sanguine temperament, exquisitely marked, concur, is not absolutely free from the attacks of hysteria; and instances of hypochondriasis in the female sex, of the opposite age and temperament, are very common.

With respect to the irregular forms of hysteria, under which it resembles many other diseases, we have already anticipated the means of forming a diagnosis. Dr. Ferriar considers the supervention of the regular paroxysm as the

principal source of discrimination: but as the disease is generally removed by this occurrence, it is desirable to detect the nature of those irregular affections at an earlier period. Besides the copious discharge of limpid urine, which Sydenham considered as the pathognomonic symptom of hysterical complaints, the same accurate observer deemed the state of the mind a valuable index of their presence; and it is obvious, from the observations above quoted from Dr. Ferriar, that he also attended to this point, and to the state of the pulse. As the most frequent exciting causes of hysterical fits are some sudden and strong emotions of the mind, whenever Sydenham was consulted by women concerning any particular disorder, which could not be accounted for on the ordinary principles of investigating diseases, he always inquired whether they were not chiefly attacked with it after fretting or any disturbance of mind; and if they acknowledged this, he concluded that the disorder was of the hysterical class, especially when the other diagnostic, copious pale urine, at the same time occurred. *Epist. ad Dom. Cole.*

Although the paroxysm of hysteria is extremely alarming to the inexperienced observer, it is scarcely ever fatal in its own form, unless when it is induced by some very violent cause; and the disorder generally disappears in the decline of life. Instances have occurred, indeed, in which it has continued to harass a patient from the commencement to the cessation of the catamenial discharge, and then ceased.

Of the Cure.—In the treatment of hysteria, as in many other diseases, considerable discrimination will be required in the application of remedies, which must be varied according to the form or degree of the complaint, to the temperament, habit of body, and condition in life, of the patient, and to the nature of the causes exciting it. Although that peculiar mobility of the nervous system, on which the disorder chiefly depends, is most frequently connected with a plethoric habit, and a purely sanguine temperament; yet this is by no means universal: for it is often observed in habits the reverse of plethoric, in which a considerable degree of debility, and a pale and phlegmatic temperament prevail. In ascribing the convulsive paroxysms of hysteria to a local plethora or turgescence of blood in the uterus, from the analogy of epilepsy and asthma, which he refers to a turgescence of blood in the vessels of the brain and of the lungs respectively, Dr. Cullen has obviously hit upon a false analogy, which will not bear him out in the explanation. For in the epilepsy and asthma, the peculiar functions of the brain and of the lungs are disordered by plethora of these organs; the functions of sense and motion, in the one case, and of respiration in the other, are almost exclusively deranged. But in hysteria, if the analogy were correct, the uterine functions should be alone or principally diseased: whereas the functions of the brain, the lungs, and the alimentary canal, are chiefly deranged, to which the supposed plethora does not extend. See Cullen, *First Lines*, par. 1523.

Whatever notion be adopted as to the pathology of the disease, the curative indications seem to resolve themselves into two; namely, *first*, in the paroxysm, to check its violence; and, *secondly*, in the interval, to endeavour to lessen or remove the predisposing and exciting causes.

The first indication will be fulfilled by different means, according to the state of the patient's habit. If she is of a robust and plethoric constitution, *blood-letting* is the most effectual antispasmodic that can be employed; and when the convulsions are severe, or long continued, with a flushing or fulness of the vessels of the face and external parts, it is the only antispasmodic that can be administered with safety.

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At the same time, the turgescence and activity of the blood-vessels, and the consequent over-irritation of the nervous system, may be diminished by the application of cold to the head and abdomen, or to the body in general. The use of nauseating emetics has also been recommended for this purpose. Where the plethora is not so considerable as to warrant general blood-letting, cupping from the neck, or from any part in pain, may be substituted.

But in those habits, which exhibit no marks of plethora or of considerable strength, evacuations of blood, so far from being beneficial, are extremely detrimental, and are absolutely enumerated among the causes which induce the disease. In such constitutions, the hysterical paroxysm is to be diminished or cut short by stimulant and antispasmodic medicines. Of these, opium, in its various preparations, is one of the most effectual; and its efficacy is considerably aided by a combination with the more diffusible stimulants, especially with æther and ammonia, or the volatile alkali. It is most commonly not difficult to force the patient to swallow twenty or thirty drops of sulphuric æther and of tincture of opium, in any liquid, at the commencement or during the continuance of the fit; and this is frequently followed by a speedy cessation of the spasmodic motions. Various other stimulant medicines, especially those of strong and pungent odour, may be administered with good effect under the same circumstances; such are the preparations of valerian, musk, castor, camphor, assa-fœtida, oil of amber, oleum animale, &c. At the same time, any strong impression made upon the nervous system will frequently arrest the progress of the paroxysm; as the application of any strong-smelling substance to the nostrils, such as burning feathers, and volatile salts. The stimulus of heat may likewise be resorted to for the relief of the paroxysm, when it is obstinate; and it may be applied to the whole body, by means of the warm bath; or to the lower extremities, in the way of pediluvium.

After the paroxysm is over, the means for fulfilling the second indication must be adopted, in order to prevent relapses: and as the principal predisposing cause and the leading feature of the hysterical habit, (the great mobility of the nervous system,) is connected with the opposite conditions of plethora and of inanition or debility, the first object will be to correct this predisposition, by the means adapted to the removal of the one or the other of these conditions respectively. In robust and plethoric habits, the adherence to a moderate system of living, to a light and spare diet, chiefly of vegetable matters, or weak animal broths, which may be taken in sufficient quantity to distend the stomach, and relieve the sensation of inanition, without affording a copious nutriment, must be strongly recommended. The use of strong cathartics for this purpose is deprecated by Sydenham; because the irritation of these medicines, and the sudden depletion which they occasion, when drastic, are liable to excite the paroxysms, in the mobile constitution of hysterical persons, and thus to produce the evil which it is the object of medicine to prevent. With a view to reduce the strength and fulness of the habit, the constant repetition of hydragogue purgatives is surely not advisable; but for other purposes they are requisite, and shall be mentioned presently. The gradual abstraction of nutriment is the safest method of reducing the plethoric condition, especially when combined with regular exercise. In the opposite state of constitution, in thin spare habits, the opposite method of replenishing the system by nutritious and full diet will necessarily be resorted to, attending at the same time to the use of exercise. Sydenham observes that thin and bilious habits often derive the most essential benefit from a *diet of milk*, and

that "some women have been cured of long and obstinate hysterical disorders, which had baffled all the endeavours of the physicians, by living on milk only for some time." The hysterical *colic*, he says, has especially been removed by this diet, which, being much easier of digestion than a more heterogeneous mixture of food and drink, affords less irritation to the alimentary canal. On the whole, indeed, milk, as it partakes of a middle nature between that of the animal and vegetable aliments, and being in its qualities nearly assimilated to the chyle, affords the best means of restoring strength to valetudinarians, and those of weak digestive powers, where it agrees with the individual constitution. But where the debility is not so great, a moderate quantity of animal food, with some wine or fermented liquors, will be requisite.

When the state of plethora has been corrected, or pretty free evacuations have been made, and still more particularly when the habit is spare and feeble, various tonic remedies are to be resorted to, with a view to lessen the irritability and to improve the general strength of the constitution. Among tonic remedies, the metallic medicines have been found very serviceable, and especially the various preparations of *iron*. After evacuations, and in debilitated habits without any previous evacuation, Sydenham prescribed some chalybeate medicine to be taken for thirty days, considering it one of the most effectual strengtheners. He preferred, as Baglivi, Hoffmann, and other able physicians have also done, to give the iron in substance; and as he affirms, he had never found or heard that it injured any one, who used it in this manner; so much experience had convinced him that it cures with more expedition and certainty than any of the common preparations. Dr. Cullen, however, gave the preference to the salts of iron, such as the sulphate and tartrate, and the ammoniated iron. The oxyd, which is precipitated by adding an alkali to a solution of the sulphate of iron, and is in a state of impalpable powder, is a very convenient form for exhibition. The *chalybeate waters* have been also drank with great benefit in hysterical cases; but, as has been before observed, the very minute portion of iron, contained in these waters, seems scarcely sufficient to produce those beneficial effects; and much of the advantage, gained during a course of the waters, is to be ascribed to the other concomitant circumstances, which tend to re-establish the general health; namely, the constant exercise, the early and regular hours, the cheerful society, and the various amusements, which divert the attention of the patient from brooding over her feelings. See HYPOCHONDRIASIS.

Many other tonic and corroborant medicines, both of the metallic and vegetable classes, have been employed with benefit to restore the general strength of hysterical patients. Such are the oxyd and saline combinations of zinc, the ammoniated copper, and even the nitrate of silver, which have been administered in the intervals between the paroxysms of *epilepsy* (which see). But the vegetable tonics, as being on the whole more safe, have generally had the preference; among these the *cinchona*, or Peruvian bark, stands most eminent for its strengthening qualities. Where the stomach is particularly affected, the bark may be advantageously combined with some of the more aromatic bitters, all of which possess more or less of a tonic power; such as the bark of the *cajuparilla*, the roots of gentian, and colombo, a powder or extract of the flowers of chamomile, &c. Sydenham considers the Peruvian bark as next to steel in its beneficial operation upon hysterical females, and especially in that form of it in which violent convulsions take place, and the patients beat their breasts; or, in other words, where the regular paroxysms occur with considerable violence. He likewise recom-

recommends an infusion of gentian, angelica, wormwood, centaury, orange-peel, and other bitters, in *canary*, to be taken in the quantity of a few spoonfuls three times a day.

“ But,” the same intelligent physician remarks, “ the best thing I have ever found for strengthening and cheering the spirits, is riding on horse-back some hours almost every day.” This exercise, indeed, appears to have been considered by Sydenham as a *panacea* in almost all chronic disorders; and, although confirmed consumption may not yield to it so readily as his observations might lead us to expect, we are persuaded, that in all diseases, in which the alimentary and chylopoëtic viscera are chiefly disordered, this mode of exercise, steadily persevered in, affords the most certain relief.

In attempting to restore the general strength, and to lessen the irritability of the nervous system, all those expedients, which are now well understood as being conducive to health, should be employed with regularity and perseverance. The forms of exercise, as well as the quantity of it, should be proportioned to the strength of the patient, and increased as the increasing strength renders it capable of being taken with slight fatigue. The clothing should also be regulated, with attention to the varying conditions of the atmosphere; and especially with care, that in chilly weather, the deviations from the mean may be always on the side of warmth; the attempts to harden the constitution, in habits extremely delicate and irritable, being as pernicious as they are absurd in principle. All anxieties and considerable emotions of the mind should be avoided, as far as possible, and the causes of them removed. And there are circumstances at times, which render it advisable to change the sexual condition of the patient, by marriage; by which the mental state in some cases may be probably relieved, and the uterus, being called upon to perform its natural functions, may likewise be restored to a more healthy condition.

From what has been said above, in regard to the deceptive forms of the irregular hysteria, when it mimics, as it were, the various organic diseases, according to the organ in which it takes its seat, we by no means wish to mislead the inexperienced into a belief, that these organs are not often seriously affected, and that active remedies are not often to be applied to them under such disorders. On the contrary, Sydenham has mentioned the hysteric apoplexy as being sometimes fatal. All that is to be understood by calling these local organic attacks *hysteric*, is, that where they occur in a constitution, in which either imperfect paroxysms of hysteria, or the great nervous mobility and variable spirit of the hysteric habit appear, in such cases the symptoms are to be considered as much less formidable than those of ordinary organic disease, and as likely to yield more readily to remedies, which therefore require to be used with less activity and vigour, and to be repeated with more caution. Whenever the individual organs and their functions are greatly disordered, it is the duty of the physician not to omit the remedies which experience has shewn to be effectual in restoring them to health in other cases; watching, at the same time, the various concomitant appearances which may indicate the peculiar state of the habit, and may lead him to discriminate the counter-indications. Such discrimination, however, is not peculiar to the treatment of hysteria; it is in all diseases requisite, and the possession and exercise of it constitute the principal characteristic of an experienced physician.

Before we conclude, we must observe, that the apprehensions which Sydenham and many other physicians have entertained, relative to the danger of using purgatives freely in hysteria, appear to have been carried to a degree far beyond what

unprejudiced observation would lead us. In this, as in many other diseases in which the alimentary canal is much deranged; a free purgation is not only safe, but most beneficial; and a considerable discharge of dark, offensive, and unnatural faeces is often thus procured. Dr. Hamilton affirms, that he has adopted this practice with great success, calling in at the same time the aid of foetid and tonic medicines, which, however, he considers as merely subsidiary. At all events, though Dr. Hamilton may have kept one indication too exclusively in view, yet the lesson which he has taught us, to unload the bowels in all these nervous cases, is doubtless extremely important. See his *Obs. on the Utility of Purgative Med.* 2d edit. chap. vii.

HYSTERICUS Lapis, in *Natural History*, a name given to an American stone, called also *lapis uterinus*, supposed to be famous for its virtues against disorders of the womb, externally applied. It is black, and capable of a fine polish.

HYSTERICUS Clavus. See *CLAVUS*.

HYSTERITIS, in *Medicine*, from *ὕστερα*, the *womb*, with the termination *itis*, used to denote inflammation, signifies inflammation of the womb. Sauvages, and some other writers, have employed the term *Métritis*, from *μήτρα*, also signifying the *womb* or *uterus*, to denote the same disease. *Nosol. Method. Clafs iii. Gen. 15.*

The uterus is obviously liable to suffer inflammation, like the other viscera of the body, from the common causes of inflammatory disease. In the unimpregnated state, however, it is less frequently attacked by this disorder than most of the neighbouring organs; and seldom, if ever, is thus affected, except about the periods when its vessels are in a state of increased action, in consequence of the occurrence of the menstrual discharge. At these periods, when not only the uterine system, but the constitution in general, undergoes a slight erethism, or tendency to febrile excitement, sudden exposure to cold, violent exercise, great heats, or very high feeding, occasionally bring on inflammation in the womb; more especially in females of plethoric habit, and strong fibre, who are accustomed to a system of diet above the rules of just temperance. Where the uterus has become subject to inflammation in this way, it appears often to become unfit for the office of conception, and leaves the patient childless.

The most frequent cause of inflammation of the womb, however, is the irritation or injury which it is liable to suffer during the process of parturition or abortion. When it is considered, indeed, how much pressure different parts of this organ necessarily undergo, during these processes, even by the long continued actions of the uterus itself upon the body of the child; and that, in the early part of labour, it not unfrequently occurs, that the lower segment of the uterus is protruded into the cavity of the pelvis, along with the head of the child, and in this situation is squeezed between the head and the sides of the pelvis; (not to mention the occasional necessity of using instruments;) it must be obvious that many causes of violence will be applied in a natural labour, and more in difficult and preternatural cases. Perhaps the free discharge of the *lochia*, which is a necessary consequence of the separation of the *placenta*, answers the secondary purpose of local depletion, and thus, like a copious blood-letting instituted by art, prevents the evils which would otherwise be very likely to ensue. This supposition is rendered farther probable, from the circumstance that inflammation of the uterus, when it comes on a few days after child-birth, commonly arises where the patient has been exposed to cold, by being taken out of bed too early, (a practice deservedly reprobated by Sydenham,) and is connected with a suppression of the lochial discharge. See

HYSTERITIS.

Clarke's Essays on the Management of Pregnancy and Labour, &c. p. 59.

Inflammation of the substance of the uterus, when it exists simply, is tolerably well marked by its symptoms. It usually begins about the second or third day after delivery, and is first known to exist by a sensation of pain felt at the lower part of the abdomen, which gradually increases in violence, and is distinguishable from *after-pains* by its constancy. After-pains are intermittent, like the pains of labour, depending, like them, upon contractions of the uterus; but the pain of inflammation, arising from the uninterrupted action of the vessels, is necessarily unremitting. The patient complains much of any pressure applied externally to the region of the uterus; and this organ feels larger than common under the hand, as well as much harder, resembling almost a stone in firmness. Marks of constitutional affection soon appear in the increase of heat over the whole body, a white and dry tongue, thirst, head-ache, a hard, full, and strong pulse, (when the disease occurs in full habits,) and in all cases a frequency of pulse, from 100 to 120 strokes in a minute. Very soon after the attack, the stomach is usually affected with sickness and vomiting; but this symptom is not invariably present. There is commonly a considerable degree of pain in the back, shooting round the pelvis to the groins, and down the thighs. Not only the lochial discharge, but also the secretion of milk is for the most part interrupted. The bowels are variously affected; often colic in the commencement of the disease, but frequently very loose as it advances. The urine is commonly high-coloured, depositing sometimes a pink-coloured sediment, when it can be seen unmixed with the uterine discharges. It will sometimes be found, when the disease has communicated with the neck of the bladder, or when the uterus and bladder have suffered, that suppression of urine will take place, so that the catheter must be employed two or three times a day to draw it off. On the other hand, we have seen the inflammation apparently extend to the kidneys, in which case no urine was secreted for two or three days; yet the patient experienced the sensation of an urgent desire to make water, probably from the inflammation being likewise communicated to the neck of the bladder. If the inflammation is very great, it may spread to the peritoneum, covering the fundus of the uterus, and lining the cavity of the belly; in which case there is great swelling, tension, and soreness of the belly, and other new symptoms arise, such as characterize the child-bed fever, described in another place. See PERITONITIS *Puerperarum*.

In the progress of the disease, slight shiverings frequently take place at different times in the day, while the acuteness of the pain is diminished, and the face of the patient becomes occasionally flushed. These symptoms, together with the increased frequency and weakness of the pulse, mark the tendency of the disease either to suppuration, or to a dangerous failure of the vital powers. The tongue puts on a fiery red or scarlet appearance, which is often followed by aphthæ: symptoms of great general irritation succeed; and the patient is often cut off in a short time. Now and then, however, a flow of foetid lochia relieves these symptoms, the pulse becomes less frequent; the flushings more rarely appear; the tongue grows paler, and the skin, which before had been hot and dry, now relaxes and is cooler; a spontaneous diarrhœa comes on, and the patient recovers. (Clarke, loc. cit.) The case is more favourable, and the prospect of recovery greater, where these shiverings and flushings have never occurred; but where the uterus gradually becomes softer, and less tender on pressure, the lochial discharge returns in its usual quality and quantity, and the secretion of milk begins again.

Of all the acute diseases, to which women are liable in the puerperal state, inflammation of the womb appears, on the whole, to be the least fatal; partly, perhaps, because the pain and fever accompanying it, at a time when the patient is necessarily under the care of her medical attendant, speedily call for the application of remedies. When the disease destroys life, it is usually by symptoms of excessive irritation: sometimes it goes on to suppuration; but rarely, it would seem, to mortification. It is true, as Dr. Clarke observes, that mortification has been often described as occurring in the uterus; but he is satisfied from experience that this has been chiefly said to happen by persons not habituated to the examination of the bodies of women who have died in child-bed, and who have mistaken the appearance of that part of the uterus, to which the placenta had adhered, for gangrene: whereas, it is commonly only the remainder of the maternal portion of the placenta, and of the coagula of blood formed at the extremities of the large vessels of the uterus, upon the separation of the placenta; and a very little attention, by gently scraping off this substance, will detect the found internal surface of the uterus beneath.

On dissection, after death produced by *hysteritis* in puerperal women, the uterus is commonly found very firm in its substance, but larger than when naturally contracted. Upon cutting into it, *pus* is often found, which is situated in the large veins, and not in any circumscribed cavity, like that of an abscess. Inflammation is often observed running along the Fallopian tubes, and into the ovaria, which when cut open are found loaded with blood. Pus is also sometimes found in the cavity of the Fallopian tube, as well as in the substance of the ovaria, which are in some cases distended by inflammation and matter, so as to equal in bulk a pigeon's egg. When the inflammation has existed in the uterus simply, little or no extravasated or secreted fluids have been found in the cavity of the abdomen: the peritoneal surfaces have also been discovered free from disease in some cases. In others, however, the peritoneum which covers the uterus has been observed to be partially inflamed, as well as that covering the posterior part of the bladder. Clarke, loc. cit. Baillie, Morbid Anatom. p. 364, 2d edit.

When the symptoms of inflammation of the uterus concur with the puerperal state, or severe abortion, little doubt will arise as to the seat of the disease. But when it occurs in the unimpregnated state, the symptoms may be mistaken for those of inflamed bowels, kidneys, or bladder, if not very attentively investigated. When, however, we observe a woman complaining of a burning pain, with a sense of weight and distention in the lower part of the belly, the pain being constant, fixed, and throbbing; when there is also a pain in the loins, frequently shooting round the pelvis to the groins, and down the thighs, and in addition to these, an acute fever, with sickness at the stomach, and extreme restlessness, little doubt can remain respecting the existence of inflammation in the uterus. An examination *per vaginam*, when the *os uteri* will be found extremely tender and painful to the touch, will more completely decide the matter, where it is permitted. The inflammation, however, is liable to become complicated, in this case too, by extending to the kidneys, bladder, and other contiguous parts; and a degree of strangury and *tenesmus* (or fruitless desire to go to stool) is liable to occur from the mere vicinity of the uterine irritation.

Cure of Hysteritis.—As the disease, therefore, is often extended to different organs at the same time, and the symptoms must necessarily be rather complicated, the functions of all the suffering organs being in some measure deranged, an accurate distinction of the seat of the disorder is often difficult. This, however, is the less important, as the same remedies

remedies will remove the inflammation, in whichsoever viscous it may occur. Of these, *blood-letting* is the most efficacious; and, even in the puerperal state, in strong constitutions, it should be early and liberally employed. In the disease happening independent of parturition, it cannot be omitted with safety, perhaps, under any circumstances; but the repetition of it must be determined by the constitution of the patient, the violence of the symptoms, and the effect of the previous bleeding on the disease. It may frequently be found necessary a second and a third time. But in less robust habits, it will be expedient, if the symptoms, although diminished, have not been entirely removed by the first bleeding, to take away more blood by applying six or more leeches, inclosed in a basin, to the belly, or by cupping the skin of the abdomen. A *blister* may be also applied to the belly, as near the seat of the pain as may be. Dr. Clarke, however, is of opinion that these applications are not so beneficial in this affection, as in some other inflammatory disorders; and thinks that he has often observed them to increase the frequency of the pulse, and the irritation in the system at large. At the same time, the decided advantages obtained from blisters, in peripneumonies and other internal inflammations, lead him to speak hesitatingly against the general employment of them. Gentle *cathartics*, especially of the saline class, are evidently useful in the case of hysteritis, unconnected with child-birth; but in that which follows delivery, a course of purging is not to be recommended. It is always right, indeed, in the first instance, to procure two or three evacuations from the intestines; but, afterwards, it will generally be enough to preserve the regular motions of the bowels, by giving, from time to time, small quantities of castor oil, or a little rhubarb mixed with some saline purgative. Dr. Clarke states this objection to long continued purging, that it has the effect of preventing that gentle perspiration, which, if it can be produced and kept up, does more towards curing the disease than any internal remedy can effect. With a view of producing this salutary determination to the skin, small doses of antimony and opium, or the compound powder of ipecacuanha, which bears the name of Dr. Dover, with the addition of a little rhubarb, and an occasional saline draught, may be usefully administered. In case a spontaneous diarrhoea should come on, it should not be interfered with, farther than taking care that the strength of the patient be not too much reduced by it. Except where there is reason to suspect the existence of undigested or indigestible aliment in the stomach, the action of vomiting should always be avoided; inasmuch as it constantly increases the pain by the agitation which it occasions, and the pressure made by the muscles of the abdomen on the inflamed uterus.

It is scarcely necessary to add, that, during the whole course of the disease, every thing heating and stimulating should be cautiously avoided; that the food of the patient should be of a mild and digestible nature, consisting of liquid and vegetable substances, and her drink watery and diluent, every sort of animal food, and of fermented and spirituous liquors, being abstained from.

As hysteritis occurs, both connected with and independent of parturition, particularly in those who indulge in full diet, and in the use of heating food and liquors; so the prevention of the disease must depend principally upon temperance and regularity in this respect. In the former case, this end may be obtained by attention to the proper management of the woman both before and during labour.

If the diminution of pain, and the accession of shiverings, announce the commencement of suppuration, little, it is to be feared, can be done by medicine. Under such circumstances, a great proportion of patients will be carried off. The

most favourable tendency of the suppuration will be, when the pus is in the veins of the uterus, or in the Fallopian tube, that it may escape into the cavity of the uterus. The only means within the power of the physician, in this case, are to recommend a milk-diet, or some other light and nutritious aliment, and to soothe the irritation and pain by moderate doses of narcotic medicines.

HYSTERIUM, in *Botany*, a name given by Perfoon and others to a species of Fungi, composed of various species, amongst which is the *Lichen pulicaris* of preceding authors, but this name will probably not be retained.

HYSTEROCELE, in *Surgery*, a rupture, or hernia, containing the uterus. The term is derived from ὑστέρηξ, *the womb*, and κελύ, *a tumour*. See **HERNIA**.

HYSTEROCYSTICA ISCHURIA, a retention of urine, arising from the pressure of the uterus upon the bladder.

HYSTEROLITHUS, formed of ὑστέρηξ, *womb*, and λίθος, *stone*, or *Cunoolithus*, in *Natural History*, a stone thus called, from its resemblance to the external parts of generation of the female sex. This is a species of helmintholithus in the Linnæan system. These stones are found in great abundance near the castle of Braubach, upon the Rhine, on the confines of the landgrave of Hesse.

HYSTEROLITHUS is also a name given by Ol. Wormius (Museum, p. 83.) to the cast or inside impression of a sort of Anomia shell, as Dr. Woodward states in his Letters on the Method of Fossils (p. 10.), and thus shews the absurdities of the tales which had been related of this stone. This species of anomia occur with mytilites, in argillaceous rubble-stone, or slate. Kirwan's Geo. Essays, p. 244.

HYSTEROLOGY, ὑστέρολογία, signifying a *discourse inverted*, in *Rhetoric*, a species of hyperbaton, or a vicious manner of speaking, wherein the natural order of things is inverted; called also by the Greeks ὑστέρων προτερων; *q. d.* putting the first thing where the last should be.

Thus Terence uses *valet & vivit*, for *vivit & valet*. And Virgil *moriamur & in media arma ruamus*, for *in media arma ruamus & moriamur*. Quintilian exposes this fault, lib. xi. cap. 2. where he says, *quædam—turpiter convertuntur, ut si peperisse narres, deinde concepisse; in quibus, si id quod posterius est dixeris de priore tacere optimum est*.

HYSTEROPHORUS, in *Botany*. See **PARTHENIUM**.

HYSTEROPOTMI, ὑστέρωποτμοί, in *Antiquity*, the same with deuteropotmi.

HYSTEROPTOSIS, in *Surgery*, a bearing down of the uterus.

HYSTEROTOMIA, from ὑστέρηξ, *the womb*, and τομή, *a section*, the operation of cutting through the parietes of the abdomen into the uterus, for the purpose of extracting the fœtus, a proceeding sometimes necessary: the Cæsarian section.

HYSTEROTOMOTOCY, ὑστέρωτομωτοκία, an operation more usually called the Cæsarian section.

HYSTRIX, in *Zoology*, a genus of mammalia, in the order Glires, the fore-teeth in which are two in number, and cut off obliquely; the grinders eight; toes either four or five; and the body covered with spines and hair. These constitute the porcupine genus of English writers.

Species.

CRISTATA. Anterior feet four-toed; posterior pair five-toed; head crested; tail short. S. G. Gmelin. *Hystrix cristata cristata*, Brill. *Hystrix*, Gesner, &c. *Stachelschwein*, Ridinger. *Porc-épic*, Buff. *Crested porcupine*.

The length of this species is about two feet; the head long and compressed; the snout short and obtuse; the upper lip cleft to the nostrils; eyes small, and black; ears oval;

broad, and short; tail conic and spinous; feet short; hair between the spines cinereous; the spines long, stout, smooth, and annulated with black and white. The longest of these spines, and also the bristles of the neck, it is able to erect at pleasure. This animal is found in Asia, Africa, and the south of Europe, as Italy and Spain; it burrows in the earth, where it forms a number of convenient apartments, with a single entrance. During the day time the porcupine remains in its burrows; which it leaves at night in search of fruits, roots, herbs, and other vegetables of which its food consists. When frightened it rolls itself up like the hedgehog, and presents its formidable armament of spines, for it has no other means of defence, but this is alone sufficient to repel the temerity of most animals that venture to attack it. The porcupine brings from two to four young at a litter, is easily tamed, and the flesh is reputed excellent for the table. There appear to be several varieties of the common porcupine.

PREHENSILIS. Feet four-toed; tail long, prehensile, naked at the end beneath. Schreber. *Hystrix Americanus*, Briff. *Cuandu Brasiliensis*, *Lusitanis Ourico caelieno*, Mareg. *Brasilian porcupine*.

A native of the woods of Brazil, New Guinea, and New Spain. This species climbs trees, feeds on fruits and small birds; grunts like the swine, rolls itself up, sleeps in the day, is easily tamed, and is taken for the sake of its flesh, which is esteemed an article of food. The length of the body is about fifteen inches; the tail seven inches; the whiskers are long and white; feet cinereous; claws strong and black. A supposed variety, with the tail longer and spines shorter, (*Hystrix longius caudatus*, *brevioribus aculeis*,) is described by Barrer. Fr. équin. The animal called *Hoitztlacuatzin*, seu *Tlacuatzin*, by Hernandez and Nieremberg, is presumed by Gmelin to be another variety of this kind; it has the tail short and thick; a third kind is said to be smaller than the common Brazilian porcupine, and has the head white.

MEXICANA. Tail long, prehensile; hind feet four-toed; spines nearly concealed among the long hair. *Mexican porcupine*.

Length eighteen inches; tail nine inches; body dusky. This kind inhabits Mexico.

DORSATA. Interior feet four-toed; hind feet five-toed; back spinous. Schreber. *Hystrix pilosus Americanus*, Cateby. *Cavia Hudsonis*, Klein. *Urson*, Buffon. *Hudson's-bay* or *Canadian porcupine*.

Inhabits North America; the body is rusty brown above; tail beneath white at the tip; and the spines nearly concealed among the hair. This animal is nearly the size of the hare; it digs holes under trees, and feeds on fruits and the bark of the juniper. The Canadian porcupine is sometimes found entirely white.

MACROURA. Feet five-toed; tail very long; spines clubbed or jointed. Schreber.—*Porcus aculeis sylvestris*, Seba.

The ears in this species are short and naked; the tail the length of the body, the tip crowned with a tuft of long, knotted, silvery hairs; body short and thick; ears short and naked; and the eyes large and bright. Inhabits the woods of the islands in the Indian ocean.

HYTH, or **HITH**, a port, wharf, or little haven, to embark or land wares at. Such is *Queen-hith*, &c.

HYTHE, or **HITHE**, in *Geography*, a market town and one of the principal Cinque Ports, is situated in the parish of Saltwood, hundred of Heane, and county of Kent, England. Its name signifies, in Saxon, a port or haven; and it was anciently of far greater importance, as a maritime

town, than at present. Leland says, "it hath bene a vere great towne yn length, and conteyned iiii paroches, that now be clene destroyed; that is to say, St. Nicolas paroch, Our Lady paroch, St. Michael's paroch, and our Lady of Westhith."—And again—"to cownt from Westhith to the place wher the fubitans of the towne ys now, ys ii good myles yn length al along on the shore." He mentions a fire in the reign of Edward II, which destroyed nearly four hundred houses, and was followed by a pestilence; so that the town was greatly diminished. In the beginning of the next century, it again suffered much by similar visitations. At the time of the maritime survey, in the reign of Elizabeth, there were 122 inhabited houses in Hythe, and persons "lacking habitation" ten: its shipping consisted of "seventeen travellers, at five tuns; seven shoters, of fifteen tuns; three crayers, of thirty tuns; and four crayers, of forty tuns." Since this survey, the haven has been wholly lost, and the sea beach is now nearly three quarters of a mile from the town. According to the returns under the act of 1801, the number of houses in Hythe was 217; that of inhabitants 1365. The houses are chiefly comprised in one long street, running parallel with the sea; but having two or three lesser ones branching off at right angles. The civil government of the town is vested in a mayor, twelve jurats, and twenty-four common-council-men; by whom, together with the freemen, the representatives are elected; the number of voters being about 180. The first return of barons to parliament from this port, was in the forty-second year of Edward III. The church occupies a very elevated situation on the acclivity of the hill above the town. It is built in the form of a cross, with a tower at the west end, and appears to have had originally another tower, rising above the roof, from the intersection of the nave and transept. The west tower, with the south end of the transept, was rebuilt between the years 1748 and 1751, at which time the whole church underwent a general repair. Near the altar, on the south side, but partly concealed by the wainscoting, are four beautiful stone seats, with trefoil heads, and a range of circles and quatrefoils above them. The church-yard commands a fine view of the sea, and coast of France. Near the middle of the principal street are the court-hall and market-place; and in one of the streets leading towards the beach, on the opposite side, is a small theatre. In this parish are two hospitals, or alms-houses, of ancient foundation; the one called St. John's, the other St. Bartholomew's. The former was founded for lepers previously to the year 1336, but at what particular era is uncertain; the other was built by bishop Hamo Noble, surnamed De Hythe, from his having been born in the town; and his deed of foundation, which is printed in the *Registrum Rossense*, describes it as "erected on the spot where he and his ancestors first had their origin." Besides the Martello towers that have been recently erected along this coast, there are several small forts on the beach in this vicinity, which were built shortly after the commencement of the last war. On the heights immediately above Hythe are extensive ranges of barracks for infantry, erected since the beginning of the present century; and near these are numerous mud-wall cottages for the wives and families of the soldiers. Other barracks, of a temporary kind, are within the town. Hythe is distant from London 67 miles; and has a weekly market on Thursday.

About one mile north-west from Hythe stands Saltwood castle, the original foundation of which has been attributed to the Romans, though probably on insufficient authority. Kilburne says, that it was erected by Oesc, son of Hengist; and Grose states that "on examining these ruins, every stone of them evidently appears to have been laid by the Nor-

mans." This last assertion is not only disproved by historical authorities, but is demonstratively erroneous; as the principal buildings now standing are of a much later date, and in a different style of architecture. Hasted states that it was rebuilt by Henry de Essex, baron of Ralegh, and standard-bearer to Henry II. Archbishop Courtenay, who was promoted to the see of Canterbury in the fifth year of Richard II., expended great sums in rebuilding this castle, to which he annexed a park, and made it his usual place of residence. The site of this castle was well chosen; the walls encircle an extensive area, of an elliptical form, surrounded by a very broad and deep moat, partly natural, and partly artificial.

The entrance into the first court was by a gateway, now in ruins, defended by a portcullis: the outer walls were strengthened by several circular and square towers, all of which are dilapidated.

About half a mile from Saltwood, westward, is Sandling, the new seat of William Deedes, esq. who has built here a large mansion, under the direction of Bonomi, on a hill which commands fine views of the sea, and yet looks down on its own demesne, consisting of wooded valleys, and reclusive rural scenery, possessing many beauties. Hasted's Kent, vol. iii. Beauties of England and Wales, vol. viii.

I and J.

I

I, The ninth letter of the English alphabet, may be considered both as a vowel and a consonant; agreeably to which two different powers, it has two different forms; though, since the vowel and consonant differ in their form as well as sound, they may, as Dr. Johnson observes, be more properly accounted two letters.

The Hebrews call the *j* consonant *jod*, יוּד, from יָד, *land* and *space*; because it is supposed to represent the hand clenched; so as to leave the space underneath void. With them it was pronounced as the consonant *y*, as it still is among the Germans, and some other people. The Greeks had no *j* consonant, and for that reason used their vowel *i* instead of it, as coming the nearest in sound. The letter *i* was used as a consonant among the Latins. In English *j* consonant has invariably the same sound with that of *g* in *giant*; and serves to mollify that of the vowels; as in *Jesu*, *just*, *juvial*. *I* vowel varies in its sound: in some words it is long, as *fine*, *thine*, &c. In others short, as *fin*, *thin*. Prefixed to *e*, it makes a diphthong of the same sound with the soft *i*, or double *ee*, in *field*, *yield*, except in *friend*, which is pronounced *frend*. Subjoined to *a* or *e*, it makes them long, as *fail*, *nigh*; and to *o* makes a mingled sound, which approaches more nearly to the true notion of a diphthong, or sound composed of the sounds of two vowels, than any other combination of vowels in the English language, as *oil*, *coin*. The sound of *i* before another *i*, and at the end of a word, is always expressed by *y*. Johnson.

The vowel *i*, according to Plato, is proper for expressing fine and delicate, but humble things; on which account that verse in Virgil,

"Accipiunt inimicum imbrem, remisque fatiscunt,"

which abounds in *i*'s, is generally admired.

The vowel *i* was the only vowel which the Romans did not mark with the dash of a pen, to shew when it was long; instead of which, to denote it long, they used to make it bigger than ordinary, as in *Piso*, *Vivus*, &c. According to Lipsius, they often repeated it when it was to be long,

J A B

as in *dii*. They sometimes also denoted the length of this letter by adding *e* to it, and turning it into a diphthong, as *divei* for *divi*, *omneis* for *omnis*, &c.

I, in *Grammar*, *ik*, Gothic, *ic*, Saxon, *ich*, Dutch, is a pronoun personal. By Shakspeare **I** is more than once written for *ay*, or *yes*: *e. g.*

"Did your letters pierce the queen?"

— **I**, sir; she took 'em and read 'em in my presence,
And now and then an ample tear trill'd down."

I, in *Logic*, denotes a particular affirmative proposition.

I was anciently a numeral letter, and signified a hundred, according to the verse.

"I. C. compar erit, et centum significabit."

I, in the ordinary way of numbering, signifies one; and when repeated, it signifies as many units as it is repeated times. When put before a higher numeral, it subtracts itself, as **IV**, **IX**, &c. but when set after it, it is added as often as it is repeated; as **VI**, **XI**, **VIII**, **XIII**, &c.

In abbreviatures and ciphers, **I** frequently represents the whole word *Jesus*, whereof it is the first letter.

Neither the long nor the short **I**, the consonant *ja*, nor the vowel **I**, is the initial of any technical term in *Music*.

I, in the *French Coinage*, characterizes the money of Limoges.

JA, in *Geography*, a town of Sweden, in East Bothnia; at the mouth of the river *Jafari*; 12 miles N. of *Ulea*.

JA, *St. St. Ya*, or *St. Agatha*, a town of France, in the department of the *Sesia*, situated on the *Naviglio*, containing five churches. N. lat. 43° 22'. E. long. 8° 8'. See *St. AGATHA*.

JAATSURO, a town of Japan, in the island of *Nippon*; 65 miles N.W. of *Jedo*.

JAB, a town of Africa, in the kingdom of *Woolli*, situated on the river *Gambia*.

JABA, a town of Africa, in *Bambarra*, on the *Niger*. N. lat. 13° 15'. W. long. 4° 45'.

JABADII

JABADII INSULA, an ancient name given to Sumatra, according to M. D'Anville, though others have supposed it to be Java. Ptolemy speaks of this island and says, that it abounded with gold. He calls the capital *Argentæa*, the position of which seems to correspond with that of Achen.

JABAHAHITES, a sect among the Mussulmen, who, according to Ricaut, teach, that God is not perfectly wise; that his knowledge does not extend to every thing; and that time and experience have furnished him with the knowledge of many things whereof he was before ignorant. Thus, say they, not being apprised from all eternity of every event that shall happen in the world, he is now obliged to govern it according to the chance and occurrence of those events.

JABARABA, in *Geography*, a town of Brazil, in the government of Minas Geraes; 32 miles S. of Villa Rica.

JABARIANS, a sect of Mahometans, in direct opposition to the *Kadarians*, distinguished by denying free agency in man, and ascribing his actions wholly to God. They take their denomination from Al Jabr, which signifies necessity or compulsion, because they maintain that man is necessarily and inevitably constrained to act as he does, by force of God's eternal and immutable decree. Some of these, who are more rigid in their opinion, are called *pure Jabarians*, and others, who are more moderate, are called *middle Jabarians*. The former will not allow men to have any power at all; asserting that man can do nothing, and that he is destitute of power, will, or choice, as much as an inanimate agent. They assert also, that rewarding and punishing are the effects of necessity, and they also say the fame of the impeding of commands. This was the doctrine of the "Jahmians," the followers of Jahm Ebn Safwan, who likewise held that paradise and hell will vanish, or be annihilated, after those who are destined to these habitations shall have entered them, so that at last there will be no existing being besides God. The moderate Jabarians ascribe some power to man, but such as has no influence on the action. As to those who grant the power of man to have some influence on the action, which influence is called "acquisition," some will not allow their being denominated Jabarians; whereas others reckon them in the number of middle Jabarians, and contend for the middle opinion between absolute necessity and absolute liberty, attributing to man acquisition or concurrence in producing the action, or in consequence of which he gains commendation or incurs blame; and they make the "Asharians" a branch of this sect. To the middle or moderate Jabarians, belong the "Najarians," whose founder Al Hafan Ebn Mohammed al Najar taught, that God created the actions of men, both good and bad, and that man acquired them, and that man's power had an influence on the action, or a certain co-operation, which he called "acquisition," agreeing in this respect with Al Ashari; and the "Derarians," the disciples of Derar Ebn Amra, who also held that men's actions are really created by God, but that man really acquired them. The Jabarians also say, that God is absolute Lord of his creatures, and may deal with them according to his own pleasure; so that if he should admit all men without distinction into paradise, it would be no partiality, or if he should cast them all into hell, it would be no injustice, concurring in this respect with the Asharians. Sale's *Prel. Disc.*

JABBEE, in *Geography*, a large town of Africa, in the kingdom of Bambarra, having in it a Moorish mosque, and situated on the Niger; 55 miles S.W. of Segou. N. lat. 13° 59'. W. long. 3° 21'.

JABBUAH, a town of Hindoostan, in the circar of Banwalah; 25 miles S.S.E. of Tandla.

JABEZ, or **JABESH-GILEAD**, in *Scripture Geography*, a city in the half-tribe of Manasseh beyond Jordan, situated in

Gilead, at the foot of the mountain so called. Eusebius places it six miles from Pella towards Gerasa.

JABI, or **YABBAH**, a district of Africa, on the Gold Coast, situated to the east of Anta, the soil of which is rich and fertile; but the gold obtained here is adulterated.

JABIRU, or **JABIRU-GUACU**, in *Ornithology*, the *MYC-TEREA Americana*; which see.

JABLONOW, in *Geography*, a town of Poland, in the palatinate of Braclaw; 64 miles N.W. of Braclaw.

JABLONOWSKY, **JOSEPH ALEXANDER VON**, in *Biography*, a Polish prince, who devoted himself chiefly to the sciences, and, for the sake of improvement, made several tours through Germany and France. When the troubles broke out in Poland he resigned his senatorial dignity, left the country, and took up his residence at Leipzig, where he distinguished himself not only as a friend and protector of science, but as a man of great literary acquirements. He founded a society which was named after himself, and assigned a liberal sum for the purpose of distributing premiums to the authors of the best answers to questions proposed on various literary subjects. This society still exists, holds its meetings at Leipzig, and occasionally presents the world with the fruit of its labours. The prince died in 1777, at the age of sixty-five. His works are, "The Lives of twelve Generals:" written in the Polish language: "A Treatise on the Slavonic Poetry," and some pieces of a similar nature. *Gen. Biog.*

JABLONSKI, **DANIEL ERNEST**, was born at Dantzic in the year 1660: he was educated partly at Lissa and partly at Frankfort on the Oder. He spent some time in his maturer studies at Holland, and from thence he went to England, and took all the advantages which the university of Oxford could afford him. On his return to his native country in 1683, he was admitted to the ministry, and appointed pastor of the reformed church at Magdeburg. After some successive changes he was at length appointed to be minister to the court of Berlin. He was extremely anxious to promote an union between the Calvinists and Lutherans, and to introduce into Prussia a constitution of church government resembling that of the English establishment: but his well-meant efforts proved ineffectual. He was not however disheartened by want of success, but directed all his attention to the same subject twelve years afterwards. Some account of the measures taken in this business will be found at the end of Dr. Maclaine's translation of Mosheim's *Ecclesiastical History*. To this account is annexed "A Plan of Ecclesiastical Discipline and Public Worship," drawn up by Jablonski, and several original papers. In 1706, M. Jablonski received the diploma of doctor of divinity from the university of Oxford. In 1718 the king of Prussia nominated him counsellor of the Consistory, in 1729 member of the Directory of the reformed churches, and in 1733 president of the Academy of Sciences at Berlin. He died at the age of eighty, in 1741. He was author of a great number of works, chiefly theological, but his most important were, 1. "Biblia Hebraica, cum Notis Hebraicis et Lemmatibus Latinis ex recensione, et cum Præfatione Latina, D. E. I." 2. "Jura et Libertates Dissidentium in Religione Christiana in Regno Poloniæ et Magno Ducatu Lithuanicæ, ex legibus Regni, et aliis Monumentis authenticis excerpta." Moreri. Mosheim.

JABLONSKY, **CHARLES GUSTAVUS**, private secretary to the queen of Prussia, and a considerable naturalist, began his career, as an author, by the publication of "A System of all known indigenous and foreign Insects," arranged according to the Linnæan system, and intended as a continuation of Buffon's *Natural History*. The share which Jablonsky

lonfly had in this work extends only to the seventh sheet of the third part, relating to butterflies. His illness prevented him from continuing a work that demanded much labour and attention. It was carried on by Mr. Herbit, a clergyman at Berlin; who also continued another work on the description of the Scarabæi, begun by Jablonsky. Our author died in the year 1787, at the age of thirty-one, to the regret of his friends, who had high expectations from his talents and great assiduity. Gen. Biog.

JABLONSKY, JOHN THEODORE, brother of D. Ernest, was born at Dantzic in 1654. He was educated partly at Amsterdam, and partly at Berlin, from whence he was sent to the Gymnasium of Königsberg, and then to Frankfort on the Oder. In 1680 he made a tour through Germany, Holland, and England, and in 1687 he accompanied the princess of Deffau to Poland, where he remained till the death of the prince Radzivil, the husband of his patroness. He was now appointed secretary at the court of the duke of Saxe-Barby, and in 1700 was elected secretary to the Academy of Sciences at Berlin, then newly established. In 1715 he accompanied on his travels, in the capacity of tutor, Frederic William, hereditary prince of Prussia, and upon his return was appointed a counsellor of state. He died in 1731, leaving behind him a great number of very learned works, among which was "A General Dictionary of Arts and Sciences;" which was afterwards augmented and improved by J. J. Schwabe, professor of philosophy at Leipfic. Gen. Biog..

JABLONSKY, PAUL ERNEST, son of Daniel Ernest, was born at Berlin in 1693. His great talents were discovered at an early period, and having studied at Frankfort, and acquired a deep knowledge of theology and the Coptic language, he was admitted among the royal candidates; and at the king's expence made a literary tour through Germany, Holland, England, and France. In the course of his travels he had an opportunity of improving himself in the Coptic, particularly by consulting the different works in that language at Leyden, Oxford, and Paris. In 1720 he was appointed professor of philosophy, and preacher to the reformed congregation of Frankfort on the Oder: in 1722, public professor of theology, and afterwards member of the Academy of Sciences at Berlin. He died in the month of September, 1757. He was author of many learned and theological works; and was by his labours of much service to biblical literature. Two of his principal pieces were "Rhempha Ægyptiorum Deus ab Israelitis in Deserto cultus," and "Pantheon Ægyptiorum, sive de Diis eorum Commentarius."

JABLUNKAU, in *Geography*, a town of Silesia, in the principality of Teschen, on the river Elbe, with an adjoining fort; 11 miles S.S.E. of Teschen. N. lat. 49° 32'. E. long. 18° 48'.

JABOK, or JABOEK, in *Scripture Geography*, a brook on the other side of Jordan, whose spring was in the mountains of Gilead. It fell into Jordan, near the sea of Tiberias, south; and separated the land of the Ammonites from Gaulonitis, and that of Og king of Bashan. Gen. xxxii. 42 to 43.

JABOLPOUR GURRAH, a town of Hindooostan, in Gurry Mundella; 28 miles E.N.E. of Gurrh.

JABOROSA, in *Botany*, a name given by Jussieu from the Arabic appellation of the Mandrake, *Jaborose*, with which the plants in question agree in habit, and almost, as Jussieu himself hints, in genus. Juss. 125. Willd. Sp. Pl. v. 2. 1016. Lamarck. Illustr. v. 2. 11. t. 114. Clafs and order, *Pentandria Monogynia*. Nat. Ord. *Luride*, Linn. *Solaneæ*, Juss.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, bell-shaped,

in five nearly equal segments, permanent. *Cor.* of one petal, tubular, much longer than the calyx; tube nearly cylindrical; limb in five acute, somewhat spreading, segments. *Stam.* Filaments five, short, flat, inserted into the upper part of the tube, and scarcely extending beyond its orifice; anthers erect, heart-shaped. *Pist.* Germen superior, roundish; style thread-shaped, the length of the tube, erect; stigma capitate, with a small point. *Peric.* and *Seeds* unknown.

Ess. Ch. Corolla tubular. Stamens inserted into the top of the tube. Stigma capitate. Berry?

1. *J. integrifolia*. Lamarck. Illustr. t. 114.—Leaves elliptic-oblong, slightly toothed.—Native of Buenos Ayres, where it was gathered by Commerfon, from whose specimens alone, of this and the following species, any thing is known concerning them in Europe. They appear to be perennial herbaceous plants, of the size of a primrose, with several radical rather downy leaves, without any stem. *Flowers* on simple radical stalks, shorter than the leaves, the tube an inch and a half long, rather slender.

2. *J. runcinata*. Lamarck. n. 2.—Leaves lyrate. Tube of the corolla somewhat bell-shaped.—Gathered by Commerfon near Monte Video. Its lyrate, deeply toothed leaves, and shorter bell-shaped flower, much like that of *Atropa Belladonna*, sufficiently distinguish it from the preceding.

JABOTAPITA. See OCHINA.

JABOTI, in *Zoology*, the name of a remarkable species of tortoise found in America. The shell of this species is black, and has many hexangular figures marked upon it; the head and legs are brown, variegated with spots of a dusky greenish hue. The liver of this species is accounted a very delicate food.

JABOU, in *Geography*, a country of Africa, W. of Benin.

JABRIN, a district of Arabia, S.W. of Hadsjar, abounding with falt.

JACA, a town of Spain, in Aragon, at the foot of the Pyrenées, on the river Aragon; the see of a bishop suffragan of Saragossa. This ancient town, which has a citadel built in 1592, was formerly the capital of Aragon, as it is now of a district, comprehending nearly 200 towns and villages; 45 miles N. of Saragossa. N. lat. 42° 29'. W. long. 0° 41'.

JACA, in *Natural History*, the name of a kind of nut, very common in China, which is reckoned the largest of all yet known. It is produced from the trunk of the tree, as if the branches, however large and strong, were not able to bear it; its shell is so strong, that there is occasion for an ax or hatchet to open it; and within are innumerable cells or vesicles, containing a pulp of a yellow colour, which surrounds a kernel like the chestnut, that is exceedingly sweet when ripe.

JACAMACIRI and JACAMAR, in *Ornithology*. See ALCEDO *Galbula*.

JACANA. See PARRA *Jacana*.

JACAPA, or JACAPU. See TANAGRA *Jacapa*.

JACARAY, in *Geography*, a town of Brazil, in the government of St. Paul; 50 miles N.E. of St. Paul.

JACARE, in *Zoology*. See LACERTA *Alligator*.

JACARINI, in *Ornithology*. See TANAGRA *Jacarina*.

JACCA, in *Ancient Geography*, a town of Spain, in the interior of the country of the Vasconi. Ptol.

JACCATRA, in *Geography*, one of the empires of the island of Java, bounded on the E. by that of Cheribon, and to the W. by the kingdom of Bantam. It was formerly governed by its own kings; but the last of these, having been subdued by the arms of the Dutch East India Company in the year 1619, they have ever since possessed it by the right of conquest, as sovereigns. It is under the

immediate

immediate government of the governor-general and the council of India, and all the Javaneſe of Jaccatra are therefore born the company's ſubjects. Before this revolution, Jaccatra was the capital of the empire, but Batavia, which is built near the former, is now the chief place. The Preanger lands are diſtricts which did not formerly belong to the kingdom of Jaccatra, but which have been united to the company's poſſeſſions ſince the year 1677; and the adminiſtration of them is divided between Batavia and the reſidency of Cheribon. The whole country of Jaccatra, with the Preanger lands, is 110 Dutch miles in circumference, and comprizes 30 diſtricts, containing together 33,914 families, or 203,384 inhabitants; of which the diſtrict of Batavia alone includes 19,469 families, or 116,814 inhabitants. Hence it appears, that the other diſtricts are much leſs populous, ſo that a great extent of excellent land remains uncultivated and neglected, and that which is tilled is owing to the induſtry and perfeverance of the Chineſe, who are ſettled here. The depopulation of Jaccatra has been chiefly owing to the conqueſts of the company, which having taken the capital and defeated the army of Bantam, carried away the inhabitants into the latter kingdom; in conſequence of which Jaccatra remained for a conſiderable time nearly in an uninhabited ſtate. Since the year 1753, however, the population has here been conſiderably augmented. Jaccatra is watered and fertilized by ſeveral rivers, of which the largeſt are the Sadani, or the river of Tangerang, and that of Crawang, which deſcend from the inland mountains, and flow into the ſea in a northerly direction. The river of Tangerang runs into the ſea, not far from the point of Ontong Java, and near its mouth the company have a ſmall port called the "Kwal." This river gives part of its water to a canal that ſupplies the canals and moats of the city of Batavia; but the greater part is furniſhed by other rivers. The productions of Jaccatra are principally coffee, ſugar, and rice; likewiſe indigo, cotton, yam, turmeric, and cadjung, or lentiles, from which laſt oil is preſſed. In 1778 there were ſold in Holland the following articles, being productions of the colony of Jaccatra; viz. 2,000,000lbs. of ſugar, at 4 ſtivers; 2,000,000lbs. of coffee, at 11 ditto; 500,000lbs. of pepper, at 17 ditto; 100 leaguers of arrack; 10,000lbs. of candied ginger; cotton-yarn to the amount of 200,000 florins, and indigo to the amount of 1000 florins. This may be taken as the annual quantity of what Jaccatra is able to furniſh for Europe, and the gain upon theſe articles is conſiderable, as none of them coſt much; the pepper and coffee nearly $2\frac{1}{2}$, and the ſugar $1\frac{1}{2}$ ſtivers per pound. Of ſugar, the company farther diſpoſe every year full four millions of poundsweight in Japan, Surat, Malabar, and other eſtabliſhments, from which they likewiſe make conſiderable profits; and about the ſame quantity, 400,000lbs. is exported in private trade, together with immense quantities of arrack, rice, and other articles. Stavorus's Voyage to the Eaſt Indies, &c. vol. iii.

JACCHAGOGI, *Ἰακχαγόγισ*, in *Antiquity*, thoſe who carried the ſtatue of the hero Jacchus in proceſſion, at the celebration of the Athenian feſtival called *Eleuſinia*. They had their heads crowned with myrtle.

JACCHUS, in *Zoology*. See SIMIA.

JACEA, in *Botany*. See CENTAUREA.

JACI, in *Geography*, a ſmall well built and populous town of Sicily, in the valley of Demona, where a great quantity of ſilk is manufactured. It was formerly called Acis. (See ACIS.) The modern town is ſituated far higher than the ancient city, if we judge from its actual elevation above the level of the ſea, and the number of ſtrata of lava which are diſcovered in deſcending the flight of ſteps, leading from

this town to the Caricatore, which is below it; 12 miles N.N.E. of Catania. N. lat. $37^{\circ} 40'$. E. long. $15^{\circ} 15'$.

JACINA, a river of Naples, which runs into the gulf of Squillace, N. lat. $38^{\circ} 57'$. E. long. 17° .

JACINTH, in *Botany*. See HYACINTHUS.

JACK, in *Falconry*, ſignifies the male of birds of ſport. See FALCON and HAWK.

JACK, or Pike, in *Ichthyology*. See ESOX Lucius.

JACK, in *Mechanics*, is an inſtrument in common uſe for raiſing heavy timber, or very great weights of any kind. See Plate XXX. *Mechanics*, fig. 1.

But as the wheel-work of this engine is incloſed in the ſtrong piece of timber C B, the inſide of it is repreſented in fig. 2, where the rack A B muſt be ſuppoſed at leaſt four times as long in proportion to the wheel Q, as the figure repreſents it; and the teeth, which will be then four times more in number, to be contained about three in an inch. Then if the handle H P be ſeven inches long, five turns of it; i. e. five times 22 inches, or 110 inches, will be the velocity of the power, whiſt the weight raiſed by the claw A, or depreſſed by the claw B, moves one inch: for as the pinion of the handle has but four leaves, and the wheel Q twenty teeth, there muſt be five revolutions of the handle to turn the wheel once round, whoſe three-leaved pinion R will, in that revolution, juſt move the rack three teeth, or one inch. This might have been alſo known without ſeeing, or even knowing the number of the teeth of the wheel and pinions, by meaſuring a revolution of the handle in fig. 1; and comparing the ſpace gone through by it with the ſpace gone through by the end A or B. This machine is ſometimes open behind from the bottom almoſt up to the wheel Q, to let the lower claw, which in that caſe is turned up as at B, draw up any weight. When the weight is drawn, or puſhed ſufficiently high, it is kept from going back by hanging the end of the hook S, fixed to a ſtaple, over the curved part of the handle at b.

JACK is alſo the name of a well known engine uſed for turning a ſpit: the weight is the power applied; the friction of the parts, and the weight with which the ſpit is charged, are the force to be overcome; and a ſteady uniform motion is maintained by means of the fly. See the conſtruction of this engine more particularly explained and illuſtrated by a figure, under the article *MECHANICAL powers*.

JACK, *Smoke*, is an engine uſed for the ſame purpoſe with the common jack, and is ſo called from its being moved by means of the ſmoke or rarefied air; aſcending the chimney, and ſtriking againſt the tail of the horizontal wheel A B, (fig. 3.) which being inclined to the horizon, is moved about the axis of the wheel, together with the pinion C, which carries the wheels D and E; and E carries the chain F, which turns the ſpit. The wheel A B ſhould be placed in the narrow part of the chimney, where the motion of the ſmoke is ſwifteſt, and then the greateſt part of it muſt ſtrike upon the ſails. The force of this machine depends on the draught of the chimney, and the vehemence of the fire.

JACK, in a *Ship*, is a ſort of flag or colours, diſplayed from a maſt erected on the outer end of a ſhip's bowsprit. In the Britiſh navy the jack is nothing more than a ſmall union flag, compoſed of the interſection of the red and white croſſes; but in merchant-ſhips this union is bordered with a red field. See FLAG.

JACK is uſed alſo for a horſe or wooden frame to ſaw timber upon; for an inſtrument to pull off a pair of boots; for a great leathern pitcher to carry drink in; for a ſmall bowl that ſerves as a mark, at the exerciſe of bowling; and for a young pike.

JACK, a *Muſical* implement in a virginal, ſpinnet, and harpſichord;

harpichord; it is a small machine, usually made of pear-tree wood, in which is a tongue, armed with a quill. This tongue moves on a swivel, and when the quill has struck the string, by the jack being thrown up with the key, on the end of which it rests, if the finger is taken off, it returns to its place under the string, and the tongue, thrown back by passing the string, is forced into its perpendicular situation by the spring of a bristle behind it.

JACK-Arch, in *Architecture*, is an arch of one brick thickness.

JACK-Head, in *Hydraulics*, a part sometimes annexed to the forcing-pump. See **PUMP**.

JACK-in-a-Box, in *Botany*. See **HERNANDIA**.

JACK by the Hedge. See **ERYSIMUM**.

JACK-Daw. (See **CORVUS Monedula**.) This bird is very mischievous to the farmer and gardener, and is of such a thievish disposition, that he will carry away much more than he can make any use of. There is a method of destroying this bird by a particular sort of springe, which is much practised in some parts of England, and is so useful, that it ought to be made universal. The method is this: a stake of about five feet long is to be driven firmly into the ground, and made so fast that it cannot move, and so sharp pointed at the top, that the jack-daw cannot rest upon it. Within a foot of the top there must be a hole bored through it, of three quarters of an inch in diameter; through this hole is to be put a stick of about eight inches long, then a horse-hair springe or noose is to be fastened to a thin hazel-wand, and this brought up to the place where the short stick is placed, and carried with it through the hole; the remainder being left open under that stick. The other end of the hazel-rod is to be put through a hole in the stake near the ground, and fastened there; the stake is to be planted among the jack-daw's food, and he will naturally be led to settle on it; but finding the point too sharp, he will descend to the little cross stick; this will sink with his weight, and the springe will receive his leg, and hold him fast.

JACK-Daw, Purple. See **GRACULA Quiscalus**.

JACK-Ketch, is a name given by the populace to the common hangman.

JACK-in-a-Lantern. See **IGNIS Fatuus**.

JACK-Snipe, in *Ornithology*. See **SCOLOPAX Gallinula**.

JACK Wambuscum, in our *Old Writers*, a kind of defensive coat-armour, worn by horsemen in war, not made of solid iron, but of many plates fastened together; which some persons by tenure were bound to find upon any invasion.

JACK, Wood, a sort of stool made use of for sawing or cutting wood upon.

JACK-ALL, in *Zoology*, the name of a creature of the dog-kind, the *canis aureus* of Linnæus, called by authors *lypus aureus*, the gold-coloured wolf, and by the modern Greeks *spilachi*. See **AUREUS**.

JACKSON, JOHN, in *Biography*, was born at Sensley, near Thirst, in Yorkshire, in 1686. He was educated at Doncaster, under Dr. Henry Bland, afterwards head-master of Eton school. From Doncaster he went to Cambridge, and was entered, in 1702, of Jesus college. Here he took his degree of B. A. and quitted the university in 1707, and engaged himself as private tutor in the family of a gentleman of Derbyshire. In the following year he was ordained, and soon after obtained the rectory of Rossington, which had been reserved for him, by the corporation of Doncaster, after the death of his father. In 1714 he commenced his career as author, by publishing three letters in defence of Dr. Samuel Clarke's "Scripture Doctrine of the Trinity," under the name of a country clergyman. This work was the means of introducing him to the notice of Dr. Clarke,

who was anxious to procure for him some preferment in the church. In 1714, Mr. Jackson engaged in the Bangorian controversy, and proved an able defender of bishop Hoadly, in the cause of liberty. In 1716 he engaged in a controversy with Dr. Waterland, in defence of the sentiments maintained by Dr. Clarke. He pursued the subject still farther in a correspondence with Mr. Whiston, by which he was led to determine never more to subscribe to the thirty-nine articles. In consequence of this resolution, he lost, about the year 1724, the hopes which he had been led to entertain of a prebendary of Salisbury, which bishop Hoadly refused to give him without subscription. This refusal was so extraordinary, especially as it came from Hoadly, and as the law did not make subscription necessary, that the prelate was censured for it by his best friends. Whiston exclaimed, "how consistent this was with his own notion of liberty of conscience, or with that Christian freedom, of which he was always an advocate, I do not well understand." Upon the death of his friend Dr. Clarke, in 1729, Mr. Jackson was presented to the mastership of Wigton's hospital, in Leicester, by the duke of Rutland, which place he filled, till his death, with much reputation and credit, candidly admitting into the house persons of different religious persuasions, even some who had been violent partizans against him. Mr. Jackson next appeared as an author in defence of human liberty, or the liberty of the will, in opposition to Anthony Collins, who had published a pamphlet in behalf of the doctrine of necessity: he also wrote in justification of human reason; and in defence of the Christian religion, in opposition to Tindal's work, entitled "Christianity as Old as the Creation." His other smaller treatises we shall pass over, though very useful and important in the controversies and discussions of the period in which the author flourished. In 1752 he sent his great work into the world, entitled "Chronological Antiquities, or the Antiquities and Chronology of the most ancient Kingdoms from the Creation of the World, for the Space of Five thousand Years." This work, the result of much studious application, and very extensive reading, consisted of three volumes 4to., was well received by the literati of our own country, and was translated into the German language. He had other works in view, particularly an edition of the New Testament in Greek, with scholia in the same language; this he meant to have accompanied with all the various readings which he had collected, but the infirmities of age prevented him from accomplishing his designs. He died in 1763, in the 78th year of his age. He was a man of deep and very extensive learning, particularly in Greek and Roman literature, and his industry was indefatigable. He was the avowed friend of civil and religious liberty, and was never afraid of avowing the truth on any subject, although he was fully sensible of the obloquy and temporal losses to which such conduct would expose him. *Biog. Brit.*

JACKSON, THOMAS, was born at Witton, in the county of Durham, in the year 1579. Having obtained a good classical education, he was entered of Queen's college in the year 1595, and in the following year he was, on account of his great merit, unanimously elected a scholar of Corpus Christi college, notwithstanding the utmost interest was made for another candidate. He took his degrees in regular course, and was at length chosen vice-president of his college several years successively. He first obtained a benefice in his native country, which, in a short time, he relinquished for the vicarage of St. Nicholas, in Newcastle-upon-Tyne. He was in sentiment a rigid Calvinist, and was much admired and followed as a preacher. Being afterwards appointed chaplain to Dr. Neile, bishop of Durham, that prelate was the

means of making him a convert to Arminianism. In 1650 he was elected president of Corpus Christi college, on which occasion he resigned the vicarage in Newcastle, and soon afterwards was nominated chaplain in ordinary to his majesty, and collated to the vicarage of Witney in Oxfordshire. In 1635 he was made a prebend of Winchester, and in 1638 he was promoted to the deanery of Peterborough. He died in 1640, leaving behind him a character for a solid and penetrating judgment, and for extensive and sound learning. His works are numerous, but wholly theological; the principal of them consist of "Commentaries on the Apostle's Creed," in twelve books. His works, thirty years after his decease, were collected and published in three volumes folio, to which is prefixed the life of the author. Biog. Brit.

JACKSON, WILLIAM, an eminent musical composer, was a native of Exeter, in Devonshire. He was pupil of the celebrated Travers, and may be said to have imbibed no small portion of that composer's spirit. It must be allowed that Jackson possessed a considerable share of intellectual ability, and evinced on many occasions a very distinguished taste for the fine arts. His judgment in general was sound; genius will not be denied him, and when genius, judgment, and taste are united in the same person, we are entitled to expect an approximation to human excellence. At the same time it must be confessed, that these qualities were strongly alloyed by a mixture of selfishness, arrogance, and an insatiable rage for superiority.

In many of his musical compositions he has displayed traits of novelty, but these are not the most estimable of his productions. The "Elegies," the best of his works, possess superior melody, for which we may allow him credit; but the harmony of these is in some measure derived from his old master; that is, they are constructed upon the model of that composer's canzonets. Indeed, many of Jackson's early compositions favour much of the spirit and contrivance of Travers.

Jackson's fame, in a great measure, may be said to be founded in his judgment of selection with regard to poetry; though he sometimes took unwarrantable liberties with his author, in order to accommodate the lines to his music.

Perhaps no composer copied less from others than Jackson, yet at the same time it must be admitted that he was a palpable mannerist. His most interesting and novel melodies are too frequently associated with common passages that have existed almost from the origin of music; the descent of four notes in the diatonic order is sufficient to illustrate our meaning. Jackson's peculiar fort existed in giving an elegant and plaintive melody to elegiac poetry. In constituting harmony, without rendering the middle part or parts of a composition destitute of melody, Jackson stands unrivalled.

This is no trivial praise, when it is known that, before his time, composers were, and are at present, very defective in this part of their art.

It was a defect in Jackson's music, that his melody would suit any species of plaintive lines: few of his compositions displayed the art of mingling expression with melody, and preserving the latter in its purity. His "Fairy Fantasies," not yet published, evince more congruity than any others of his works.

Jackson paid his court to the graphic muse, but never looked at nature, believing, that by copying other masters, he might at last arrive at excellence. His great model was his friend Gainsborough, whose colouring and composition he constantly endeavoured to imitate, sometimes with a degree of success which induced him to lay a false claim to the merit of originality. But had he succeeded in even

equalling that great artist, his pictures would not have spoken the language of nature; the man who merely copies another, either in music or painting, can never be considered a great artist; he can only be a faint echo, and ranked among the *servum pecus imitatorum*.

Jackson's literary works, though not of the highest order, possess genius. He wrote "Thirty Letters on various Subjects," 8vo. "The Four Ages, and other Essays," 8vo. "Treatise on the present State of Music." Also some papers in the essays of the Exeter Society. He produced eighteen musical publications, consisting of "Hymns, Songs, Canzonets, Elegies," and an "Ode to Fancy," &c.

Jackson was elected organist of St. Peter's cathedral, Exeter, in 1777, and continued in that situation till his death, in 1803.

Though his general mode of living was temperate, yet he thought that a still greater abstinence would prolong his existence. He latterly dined on milk-porridge, and drank water. This experiment was fatal. His habit necessarily became impoverished, and his existence terminated in a dropsy, at the age of 73.

JACKSON, in *Geography*, a county of America, in Georgia, containing 7736 inhabitants, of whom 1400 are slaves.—Also, a county of Tennessee, in Mero district.

JACKSON, *Port*, a bay or harbour on the E. coast of New Holland, so called by lieutenant (afterward captain) Cook, who discovered it in May 1770, and found that it had good anchorage. This is one of the noblest harbours in the world, extending about 14 miles in length, with numerous creeks and coves. On the south of this, at a spot called Sidney cove, a settlement for transported criminals was fixed. Jackson lies three leagues N. of *Botany-bay*; which see. See also *NEW HOLLAND*.

JACKSON'S *River*, a head-water of James's river, in Virginia, which rises in the warm spring mountains, and runs S.W. through the valley, until it is joined by Carpenter's creek, when the river assumes the name of Fluvanna, and flows S.E. About $\frac{3}{4}$ of a mile from its source, it falls over a rock 200 feet into the valley below. It is near half as high as Niagara, but only 12 or 15 wide.

JACKSONBORO, a post-town of America, in Scriven county, Georgia; 670 miles from Washington.

JACKSONIA, in *Botany*, so named by Mr. Robert Brown, in memory of the late Mr. George Jackson, F.L.S. a man of the most excellent and amiable character, devoted to the science of botany, to which, under the auspices of his patron and friend, A. B. Lambert, esq. he has rendered several important services. The improved style of the Botanical Repository, for some time past, though far short of what he wished, is owing to his care, and he has furnished a paper in the tenth volume of the Linnæan Society's Transactions, on a new genus of Decandrous Leguminous plants, named *Ormosia*. Many manuscripts evincing his learning and scientific skill remain in the hands of Mr. Lambert. Mr. Jackson died of a rapid decline Jan. 12, 1811, aged 31, and was interred on the 16th in St. George's burying-ground, Mary-le-bone. He was a native of Aberdeen.—Brown in Ait. Hort. Kew. v. 3. 12.—Class and order, *Decandria Monogynia*. Nat. Ord. *Papilionaceæ*, Linn. *Leguminosæ*, Juss.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, in five deep, nearly equal, acute segments. *Cor.* papilionaceous, of five petals. Standard inversely heart-shaped, about equal to the calyx. Wings rather longer, obtuse, with a tooth on their upper side near the base. Keel of two petals, of the size and shape of the wings. *Stam.* Filaments ten, awl-shaped, distinct, equal, ascending, deciduous; anthers roundish. *Pisil.* Germen nearly sessile, oval; style awl-shaped, slender;

slender; stigma simple, obtuse. *Peric.* Legume ovate or oblong, somewhat swelling, of one cell and two valves, downy on their inside. *Seeds* two, roundish, without any appendage.

Ess. Ch. Calyx in five deep, nearly equal, segments. Corolla papilionaceous. Style awl-shaped. Stigma simple. Legume of one cell, downy within. *Seeds* two, without any appendage.

Of this genus, whose habit is slender and resembling that of Broom, two species are defined in an unpublished sheet of the third volume of the *Hortus Kerwenfis*, kindly communicated to us by Mr. Brown, that the memory of his friend might as soon and as widely as possible be commemorated. These are,

1. *J. scoparia*. Brown MSS.—“Stem arborefcnt, without thorns. Branches angular. Clusters terminal.”—Native of New South Wales, from whence it was sent to Kew garden by Mr. George Caley, in 1803. This is the plant mentioned in Sims and Koenig’s *Annals of Botany*, v. 1. 511, which the author of the essay there printed, and of the present article, for want of the fruit, could not then venture to determine. Its *branches* have the aspect of a *Spartium*, and are somewhat silky, leafless, much branched, and angular. *Flowers* yellow, in scattered short clusters. Specimens were long ago sent from Port Jackson, by Dr. White.—This species is kept in the green-house, and flowers from June to August.

2. *J. spinosa*. Brown MSS. (Gompholobium spinosum; Billard. Nov. Holl. v. 1. 107. t. 136.)—“Stem shrubby. Branches spinous, spreading, twice or thrice forked, angular. Bractæas very short, closely pressed to the top of the flower-stalk.”—Native of the south-west coast of New Holland, from whence it was sent to Kew, by Mr. Peter Good in 1803, and is kept in the green-house, flowering most part of the summer. The *stem* is much branched, rigid and spinous, without leaves. *Flowers* stalked, usually in pairs. Billardiere says the seeds are from two to four, and kidney-shaped.

Several more species of *Jacksonia* are destined to appear in Mr. Brown’s *Prodromus Fl. Novæ Hollandiæ*, with which, we presume, the above specific characters are contrasted. S.

JACKSONSBOROUGH, in *Geography*, a small post-town of South Carolina, on the W. side of Edisto river, about 35 miles W. of Charleston.

JACKTALL, a town of Hindoostan, in Dowlatabad; 12 miles N.W. of Ramgur.

JACMEL, a jurisdiction and sea-port town on the S. side of the island of St. Domingo. This jurisdiction, in the French part of the island, contains three parishes, remarkable for the goodness of its soil, and the abundant crops of coffee. The town is situated on the S. side of the neck of the south peninsula; 6 leagues westward of Cayes de Jacmel, or 13 S.W. of Port-au-Prince, and 53 E. of cape Tiburon. N. lat. 18° 21'. W. long. from Paris 75° 2'.

JACMEL, *Cayes de*, a town and parish on the E. side of the stream of its name; the parish is bounded E. by the plain on the Spanish part, at the foot of the mountains of Bahoruco, 80 leagues square, fit for any kind of cultivation.

JACO, a river of Brazil, which runs into the Atlantic. S. lat. 17° 25'.

JACO, in *Ornithology*. See PSITTACUS *Eritbacus*.

JACOB, in *Scripture History*, the son of Isaac and Rebecca, was born in the year B. C. 1836. He was twin-brother of Esau (see Gen. xxv. 25.), of a meek peaceable disposition, domestic in his habits, inclined to a pastoral life, and the favourite of his mother; whereas, Esau was of a more fierce

and turbulent temper, fond of hunting, and, in consequence of his masculine active spirit, the object of his father’s partial affection. Jacob derived his name from the manner of his birth, as he came into the world holding his brother’s heel, which, in Hebrew, is expressed by אָקָב, whence אָקָב, *he supplanted*, a term indicating some events that occurred in the progress of his years, and of which we have already given a brief account under the article Esau. It is needless minutely to detail the particulars of his future history, as they are recited in the book of Genesis, to which the reader is referred. Here we find, that in order to avoid the threatened effects of his brother’s displeasure, incurred as we have already related under the article ESAU, Jacob was sent by his mother to her brother Laban. In his journey he had a vision of a peculiar nature, which brightened his prospects, and induced him to form pious and laudable resolutions. On his arrival at Padan-Aram, he was hospitably received by his uncle Laban; and in a little while he conceived an affection for Rachael, his youngest daughter. In order to obtain Laban’s consent to their marriage, he agreed to serve him seven years; but at the close of this period of service, Leah, the eldest sister, was substituted for Rachael; and he contracted to serve Laban for a second term of years, upon condition of obtaining the first object of his affection. Upon the expiration of this term he married Rachael; and during his abode with Laban, he was singularly prosperous. At length his situation became intolerably grievous, and he determined to return with his wives and children, and the property he had acquired, to his own country. Availing himself of an opportunity which Laban’s absence afforded, he prepared for his journey; and he had proceeded so far before his departure was known, that Laban was seven days in pursuing him before he could overtake him. Upon their interview on mount Gilead, Laban remonstrated and Jacob justified the measure which he had adopted. Rachael, however, before her departure, had contrived to purloin her father’s *teraphim* (which see); and Laban, in his remonstrance with Jacob, complained of the robbery. Jacob, unapprized of the fact, consented to an examination of every tent, and declared that the individual, who was guilty of the robbery, should be put to death. Rachael contrived to elude the search; and Laban, apprehending that his charge was unjust, inclined to measures of conciliation. Accordingly, he proposed to Jacob terms of alliance, and that a monument should be erected as a testimony of it to future ages. Jacob acquiesced: a pile of stones was reared, called by Laban, in the Syriac tongue, Jagar-Sahadutha, and by Jacob, in Hebrew, Gilead; both signifying the heap of witness. The treaty was concluded with a sacrifice and a feast; and Laban, having embraced and blessed Jacob and his family, set out on his return to Padan-Aram. Jacob, as he pursued his journey, began to entertain apprehensions of the unappeased resentment of his brother Esau; and notwithstanding the conciliatory measures he had adopted, he soon found that his brother was advancing to meet him with an armed force, and with seeming purposes of hostility. Having recommended himself by an act of devotion to the divine protection, he prepared a costly present for his brother. At this time he was favoured with a prophetic vision, which served to allay his fears and to animate his resolution; and from a circumstance that occurred on this occasion, he obtained the name of “Israel,” signifying a man who has prevailed with God; and this became afterwards the name of his posterity. Having joined his family after this vision, he advanced to meet his brother, who received him in the most kind and affectionate manner, and invited him to settle in his neighbourhood. Jacob, however, could not easily

dismiss his apprehensions of danger, and chose rather to take up his abode near Schechem, where he purchased ground, on which he built an altar to the Lord. A circumstance of a very distressing kind occurred, for an account of which we refer to the history, which made it necessary for Jacob to remove from the vicinity of Schechem; and whilst he was deliberating whither to direct his course, he was instructed to erect an altar to God at Bethel, a place where he had received early assurances of the divine protection and favour. Having erected an altar at this place, he set out on his journey to his father; but in the way he was severely afflicted by the loss of his beloved wife Rachael, who died in childbirth of her son Benjamin. Soon afterwards he arrived at Mamre, and continued there till his father's death. At this time Joseph, being about 17 years of age, became the object of jealousy to his brethren; who, meditating his destruction, determined at length to sell him to a troop of Ishmaelites, and to feign a story, with which they imposed upon the afflicted father, of his having been torn to pieces by some wild beast. After the lapse of some years, Jacob received the consolatory news of Joseph's being still alive, and in a station of high honour and power at the court of Pharaoh. (See JOSEPH.) The news, we may well imagine, transported him beyond measure, and he fainted in the arms of his sons who communicated it. As soon as he could be persuaded that the report was true, and found himself surrounded by the presents of his son, and by the chariots of Egypt, which were to convey him and his family thither, he prepared for his journey, and in his way stopped at Beertheba, to offer sacrifices to God, thus expressing his gratitude and his desires of continued protection and blessing. Having received assurances of divine favour, he pursued his journey with pleasure; and, as he approached the borders of Egypt, he received a message from Joseph, requesting him to meet him in the land of Goshen, situated between the Red sea and the Nile, which was a fruitful territory, and adapted to his pastoral life. The interview between the patriarch and his son Joseph is best conceived by a mind of virtuous sensibility. Having obtained leave of Pharaoh to settle in the land of Goshen, Joseph conducted his father and family thither; and here they prospered and multiplied. Jacob lived 17 years in Egypt; and when he apprehended that his life was drawing to a close, he obtained a promise from Joseph that his remains should be carried to Canaan, and deposited with those of his progenitors, Abraham and Isaac, in the cave of the field of Machpelah, which Abraham had purchased. When he was dying, he adopted the two sons of Joseph, Manasseh and Ephraim, as his own; declaring, that in the division of the promised land they were to receive a double lot, and to be considered as the heads of two distinct tribes. Having delivered to his sons, who were collected round him, his dying predictions of the events that should happen to their several descendants in future times, and which exactly corresponded to the patriarch's declarations, Jacob expired, at the age of 147 years, in the year B. C. 1689. Joseph faithfully fulfilled his promises with respect to the burial of his father; and Pharaoh testified his respect for Joseph by contributing in various ways to the pomp of the funeral procession. After having deposited the remains of their father in the cave of Machpelah, Jacob's sons returned to Egypt, where they and their posterity remained till the time of the *Exodus*. See EXODUS. Genesis, ch. xxv.—4. Anc. Un. Hist. vol. ii. p. 248. &c. &c. Calmet's Dict. Bib. art. *Jacob*.

JACOB, JOHN, in *Biography*, was a native of Zulpha, and in the year 1641 he filled the post of principal joiner to the king of Persia. He was celebrated for his skill in mechanism,

and was author of many useful inventions. Having an opportunity of visiting Europe, he formed a complete idea of the art of printing, and upon his return to Isphahan he succeeded in erecting a press, and cut for himself matrices for the necessary types. The first specimens of his typographical art were in the Armenian language, and consisted of the epistles of St. Paul, and the seven penitentiary psalms. He would have proceeded with the other parts of the bible; but his progress alarmed the copyists, who excited such a clamour against him that he was obliged to lay aside the undertaking. He was a Christian in religion; but on account of his very extraordinary talents he was permitted to hold a post which was never before occupied but by a Mahometan. His sovereign would gladly have enrolled him among the followers of the prophet, but no offers of preferment, however tempting, could prevail on him to renounce Christianity. Moreri.

JACOB, HENRY, celebrated as the founder of the first independent or congregational church in England, was a native of Kent, and received his academical education at St. Mary's hall, Oxford. Having entered into holy orders, he was made precentor of Corpus Christi college, and afterwards obtained the benefice of Cheriton in Kent. In the year 1604 he published "Reasons taken out of God's Word, and the best of human Testimonies, proving the Necessity of reforming our Churches of England." The publication of this, and of another work, against what was falsely called "learned preaching," drew down upon him the persecution of bishop Bancroft, and to avoid his wrath he fled to Holland. At Leyden he met with Mr. Robinson, with whom he had frequent conferences, and became a convert to the Brownist principles, since known by the name of independency. In Holland he published several treatises, and upon his return he avowed a design of setting up a separate congregation upon the model of those in Holland. This, in a short time, he carried into effect, and thus laid the foundation of the first independent congregational church in England. He was elected pastor of the church, and continued with his people till the year 1624, when, being desirous of entering on a more enlarged sphere of usefulness, he went to Virginia, where he soon afterwards died. He was author of many publications which were highly esteemed in his day. Neal's Hist. Puritans.

JACOB, HENRY, son of the preceding, was born in the year 1609. He received the greater part of his education at Leyden, and made a wonderful progress in philological and oriental learning. He was patronized first by the earl of Pembroke, and then by archbishop Laud. By the influence of the latter he was appointed "focius grammaticalis" in Merton college, a post which had not been occupied for more than a century, and the duties of which required him to be reader of philology to the juniors. He became fellow of his college, and acted some time as amanuensis to Mr. Selden. In 1648 he was expelled from his fellowship and college by the parliamentary visitors; and being destitute of the means of subsistence he came to London, where his friend Mr. Selden contributed to his support. He was never an economist either with regard to his little property or his health, and by intense application to his studies he died, at Canterbury, at the early age of 44. He left behind him many very learned pieces, particularly "Græca et Latina Poemata." Gen. Biog.

JACOB, a performer on the establishment of the Royal Academy at Paris, a scholar, on the violin, of Gavigné, who likewise taught that instrument, according to the principles of his master, by which he acquired reputation. He published, in 1769, a new musical grammar, in which he wrote
down

down the doctrine of the Abbé la Cassagne, concerning the reduction of all clefs to one; calling his book l'Unclesier, a plan which he had stolen from our countryman, Salmon, as Dumas had done before, and others of his countrymen since. Salmon's "Essay for the Advancement of Music, by reducing all Clefs to one," was published in 1672, to which there was no valid objection but the rendering all previous compositions obsolete. See SALMON and CLER.

JACOB, *St. in Geography*, a town of the duchy of Stiria; seven miles W. of Fridburg.—Also, a town of Stiria; six miles N.E. of Marburg.—Also, a town of Tyrol; eight miles S. of Landeck.—Also, a town of Sweden, in the government of Abo; 10 miles E. of Abo.

JACOB'S CREEK, an eastern water of Youghiogany river, in Westmoreland county, Pennsylvania. Six miles W. to Monongahela river there is a carrying place from the Youghiogany, opposite to the mouth of this creek.

JACOB'S LADDER, in *Botany*. See POLEMONIUM.

JACOB'S STAFF, a mathematical instrument for taking heights and distances; the same with the cross-staff.

JACOBÆA, in *Botany*. See SENECIO.

JACOBÆAN LILY. See AMARYLLIS *Formosissima*.

The name was given by the Spaniards, because this flower resembles, in size, colour, and shape, the red cross worn by the knights of the order of St. James, embroidered on their habits, as may be seen by some of their portraits brought into this country.

JACOBÆASTRUM. See OTHONNA.

JACOBÆOIDES. See OTHONNA.

JACOBACCI, DOMINIC, in *Biography*, an Italian cardinal, was born at Rome in the year 1443. Having fixed upon the ecclesiastical life, he applied himself to the study of the canon law and theology, and became so eminent for his proficiency in these sciences, and for his talents as a man of business, that he was employed by pope Sixtus IV., and five of his successors, in the management of several important affairs. He rose rapidly in the church; by pope Julius II. he was made vicar of Rome, and president of the university in that city; he was likewise put in possession of several bishoprics, and at length, in the year 1517, he was elevated to the rank of cardinal by pope Leo X. He died about the year 1527, when he was 84 years of age. He was author of "A Treatise concerning the Councils," which was originally published at Rome in 1538, in folio. It forms the 18th volume of father Labbe's "Collectio Maxima Conciliorum," and renders that collection extremely valuable.

JACOBIN, in *Ornithology*. See LOXIA *Molucca*.

JACOBINE, the name of a particular species of pigeon, called by Moore the *columba cyprica cucullata*. (See COLUMBA *Cucullata*.) It is generally called the jack, for shortness. It is, when genuine and of the true breed, the smallest of all pigeons. It has a range of feathers inverted quite over the hinder part of its head, and reaching down on each side of the neck to the shoulders of the wings, which forms a kind of friar's hood, from whence the bird has its name. This species has also a short bill, and a pearly eye. The colour is various in the feathers; there are reds, yellows, blues, blacks, and mottles; but whatever is the general colour, the head, tail, and flight, are white. Some pigeons of this species are feather-legged, others are not.

JACOBINS, a name given in France to the religious who follow the rule of St. Dominic, on account of their principal convent, which is near the gate of St. James, in Latin Jacobus, at Paris; and which, before they came possessed of it in the year 1218, was an hospital of pilgrims, dedicated to the said saint. (See DOMINICANS.) Others maintain, that they have been called Jacobins ever since they were

established in Italy, because they pretended to imitate the lives of the apostles.

They are also called *friars predicants*, or *preaching friars*.

JACOBINS, a term of reproach applied soon after the French Revolution to those who actually were, or who were suspected to be attached to the French interest.

JACOBITES, in *Ecclesiastical History*, a sect of heretics, who were anciently a branch of the Eutyrians, and are still subsisting in the Levant.

They were so called from Jacobus, James, of Syria, called Albardai, or Baradæus, who was one of the heads of the Monophysites, or sectaries who owned but one nature in Jesus Christ.

This poor monk revived the cause of the Monophysites by his activity and diligence; and when he died bishop of Edeffa, A.D. 588, he left this sect in a most flourishing state in Syria, Mesopotamia, Armenia, Egypt, Nubia, Abyssinia, and other countries. The laborious efforts of Jacob were seconded in Egypt, and the adjacent countries, by Theodolus, bishop of Alexandria.

The Monophysites were a sect of vast extent, comprehending the Armenians, Copts, and Abyssinians: and the denomination of Jacobites is commonly used in an extensive sense, as comprehending all of them, except the Armenians; but it more strictly and properly belongs only to those Asiatic Monophysites, of which Jacob Albardai was the restorer and chief. All the patriarchs of the Jacobites assume the denomination of Ignatius.

As to their faith, all the Monophysites, both Jacobites and others, follow the doctrine of Dioscorus touching the unity of nature and person in Jesus Christ. See MONOPHYTESITES.

JACOBITES, in England, is a term of reproach bestowed on such persons as disallow of the revolution by king William, and still assert the rights, and adhere to the interests of the abdicated king James, and his line.

JACOBS, LUCAS, in *Biography*, a painter, born at Leyden, and therefore commonly known by the name of Lucas Van Leyden. In the year 1494 he made the entrè of life, and as he grew up was instructed by his father, Hugh Jacobs, in the art of painting. Afterwards he became the pupil of Cornelius Engelbrecht, and had acquired considerable reputation as a painter, and also as an engraver, when he arrived at the age of manhood.

His style is of the dry Gothic school of Germany, of which Albert Dürer is the leader; close upon whom followed Jacobs, with nearly as much merit as a painter, though not his equal by far in invention. The attempt to copy the model closely is in the works of the latter as evident as in those of the former, and his draperies have the same character. Both are imperfect and meagre in lines; but sometimes, where they copied the large flowing dresses of the church, they are broad and have much majesty. His feeling of expression is of a low and vulgar cast, and oftentimes mere grimace; but it must be acknowledged that he and Albert were far above their contemporaries in Germany.

The works of this master are numerous; but he is perhaps better known by his prints, engraved by himself with great ingenuity, from a great number of his pictures in Leyden, Amsterdam, Vienna, &c. &c. He died in 1533, at the age of 39.

JACOBSHAGEN, in *Geography*, a town of Pomerania; 16 miles E. of Stargard. N. lat. 53° 25'. E. long. 15° 30'.

JACOBSON, JOHN CHARLES GOTTFRIED, in *Biography*, was born at Elbingen in 1726. He studied at Leipzig, but in consequence of an unfortunate duel he was obliged to leave that

that place, and entered into the service of the elector of Saxony. He afterwards enlisted in a regiment of infantry at Berlin, and during a two years' residence in that city he diligently frequented the different manufactories and workshops, and between the years 1773 and 1776 published his "Description of all the Cloth Manufactories in Germany," in four volumes octavo. He was indefatigable in his pursuits, and besides his own publications he assisted Sprengel in his "Collection of the Arts and Handicrafts," and Nicolai in his "Description of Berlin." In 1778 he was actively engaged in military affairs, but after the campaign of this year he obtained a discharge, and began his "Technological Dictionary of all useful Trades, Arts, Manufactures, &c." which was published in parts between the years 1781 and 1784. In the latter year he was appointed inspector of all the royal manufactories in the kingdom of Prussia; he died in 1789. He was author of "A Description of all the Linen, Cotton, and Woollen Manufactures in the Prussian States," in 4 vols. and he had begun a "Compendium of Technology," when death put an end to his labours. Gen. Biog.

JACOBSTADT, in *Geography*, a sea-port town of Sweden, in the government of Wasa, with a convenient port. N. lat. 56 41'. E. long. 22° 36'.

JACOBUS, a gold coin, worth twenty-five shillings; so called from king James the First of England, in whose reign it was struck. We usually distinguish two kinds of Jacobus, the *old* and the *new*; the former valued at twenty-five shillings, weighing six penny-weights ten grains; the latter, called also Carolus, valued at twenty-three shillings; in weight five penny-weights twenty grains.

JACOPONE DA TODI, in *Biography*, an Italian poet of the 13th century, was born at Todi, of the noble family of Benedetti, or Benedettoni. He was brought up to the profession of the law, in which he practised, obtained a fortune, and lived in every respect as a man of the world. A serious accident which befel his wife, and occasioned her death, led him to reflection, and he immediately devoted himself to religion. He entered the order of the Franciscans: to receive the humiliation of contempt he counterfeited folly, and succeeded so well, that his baptismal name of Jacopo was changed into the nick-name of Jacopone. The rigour of his superiors surpassed his own voluntary mortifications, and for a slight offence he was thrust into a noisome dungeon, where he is said to have composed one of his most rapturous canticles of divine love. He underwent greater sufferings from the resentment of pope Boniface VIII., on account of some reflections thrown out respecting the evils brought on the church by that pontiff. He was closely imprisoned, and allowed no other sustenance than bread and water. He survived his liberation but three years, and died in 1306. His "Spiritual Canticles" have given him a place among the Italian poets. Of this work the best edition is that of Venice, in 1617. Moreri.

JACPOE, in *Geography*, a town on the W. coast of the island of Borneo. S. lat. 0° 14'. E. long. 109° 21'.

JACQUELOT, ISAAC, in *Biography*, was born at Vassy, in Champagne, in the year 1647. He was educated for the ministry and as soon as he had arrived at man's estate he was appointed his father's colleague in the church of his native place. After the revocation of the edict of Nantz he retired to Heidelberg, and from thence he removed to the Hague. His talents as a preacher acquired for him a high reputation, and he was solicited by the king of Prussia to become his minister at Berlin; to which he readily acceded, and enjoyed a handsome pension from his majesty till his death in 1708. He was author of many works, among which are "Dissertations on the Existence of God;"

"Dissertations on the Messiah;" and "A Treatise on the Inspiration of the Sacred Books." He wrote and published "A Criticism on the Picture of Socinianism," written by Jurieu, which exposed M. Jacquetot to a bitter persecution.

JACQUES, FRERE (*Friar JAMES*), whose surname was BAULOT, or BEAULIEU, a celebrated lithotomist, and a man of singular character, was born, in 1651, at a village in Franche-Comté, where his father was a poor labourer. At the age of sixteen he was seized with an inclination to travel. The education, which he had received, did not extend beyond writing and reading; but he had an ardent desire for other knowledge, and a propensity, which he felt for the practice of surgery, was put in the way of gratification, by himself becoming a patient in the hospital of his province. During his convalescence, he applied himself with great assiduity to assisting the sick, and learned to bleed. He soon afterwards enlisted in a regiment of cavalry, in which he served some years, and became acquainted with an Italian empirical surgeon, named Pauloni, who had become famous for cutting for the stone, and curing ruptures. Having procured his discharge, at the age of twenty-one, Jacques attached himself to this empiric, and travelled with him five or six years, in various countries, as an assistant. At length feeling himself equal to undertake the practice without a director, he quitted Pauloni, and began to act for himself in the villages and country towns of Provence, taking no more recompence for his services, than just sufficed for his humble maintenance. After having practised his art eight or ten years, he put on a monastic habit, in 1690, or 1691, but not of any particular religious order, and took the name of *frere Jacques*, by which he was ever afterwards distinguished. He now visited the larger towns; especially Marseilles, and went also into other provinces, where he chiefly operated upon the poor; but, among the persons of rank whom he cut, was a canon of Paris, who recommended him to visit the metropolis, and gave him letters of introduction. He arrived at Paris in August 1697, and was ordered to perform his operation on the dead body in the presence of the physicians and surgeons of the Hôtel-Dieu. But although one or two of these officers gave a preference to his operation, prejudice and envy prevailed, and he was not allowed to practise it on the living body. He, therefore, quitted Paris in October of the same year, and went to Fontainebleau, the residence of the court, where the success of his operation, in the presence of the principal medical men, obtained him a reputation, which led to a second visit to Paris; where he is said to have been unsuccessful in a large proportion of his operations, and was taxed with extreme ignorance of anatomy, as well as of the art of surgery in general, so that he refused, it was alleged, to pay much attention to the wound, saying, that "it was sufficient that he had removed the stone; God would heal the patient." Time and experience, however, taught him better; and he employed proper dressings and treatment. His name spread throughout Europe as the most successful lithotomist of his time; and between the years 1688 and 1714, he visited Holland, Geneva, Flanders, and the principal cities, performing an immense number of operations with various success. When at Paris, in 1703, he performed his operation on the marshal de Lorges, who died on the following day, and he quitted that city in some disgrace, resolved never to return. He was much honoured by the magistrates of Amsterdam, who caused his portrait to be engraved, with the inscription, "Frater Jacobus de Beaulieu, Anachoreta Burgundus, Lithotomus omnium Europæorum peritissimus;" and above it, this motto, as a justification of some of his failures,

failures,—“Quia non omnes convalescunt, non idcirco nulla medicina est”—The celebrated surgeon and anatomist, Rau, opposed him, however, with acrimony; but did not refuse to borrow from him his method, which, with some improvements, constituted the *lateral operation*, afterwards brought to perfection in England by Cheselden. In the course of his travels, Frere Jacques was called to Vienna to be consulted for the emperor Joseph; and at Rome, he was received with great honour by the pope. But tired at length with wandering about, he sought his native village: his parents were dead; and, having distributed some money among his nephews, he chose a quiet retreat near Befançon, with a view of finishing his days in retirement and tranquillity. And after a sojourn of a few weeks, he died, in December 1714, at the age of sixty-nine, with all the tokens of sincere piety. Frere Jacques, though in some measure chargeable with the temerity of ignorance, was a man of genius and of an elevated mind, and deserves to rank among the improvers of an useful art. He published an account of his method of operating, in 1702, in a pamphlet of eight pages; and it was reprinted by M. Morand in the second part of his “Opuscules.” Eloy. Dict. Hist.—Gen. Biog.

JACQUIER, FRANCIS, a very learned ecclesiastic and mathematician, was born at Vitry, near Paris, in 1711, and died at Rome in 1788. He was one of the editors of what is generally known in this country as “The Jesuits’ edition of Sir Isaac Newton’s Principia.” This edition, which was published in four thin volumes in 4to. in the year 1760, is illustrated with a perpetual commentary, for the benefit, as the editors avow, neither of the very learned, nor of those who are wholly unskilled in mathematical science. Jacquier was author of several works written in the Italian language.

JACQUINIA, in *Botany*, so named by Linnaeus, in honour of the celebrated Nicholas Joseph Von Jacquin, professor of botany at Vienna, born at Leyden in 1727, who was early distinguished by the publication of his history of American plants, as he has since been by numerous very splendid works. This venerable author is, as far as we know, still living at Vienna, and has an only son, Joseph Von Jacquin, who resided for some time in England about twenty years ago, and treads in his father’s steps.—Linn. Gen. 101. Schreb. 137. Willd. Sp. Pl. v. 2. 1064. Mart. Mill. Dict. v. 2. Jacq. Amer. 53. Ait. Hort. Kew. ed. 2. v. 2. 5. Juss. 151. Lamarck. Illustr. v. 2. 45 t. 121.—Class and order, *Pentandria Monogynia*. Nat. Ord. *Sapoteæ*, Juss. *Myrsineæ*, Brown.

Gen. Ch. *Cal.* Perianth inferior, of five roundish, concave, permanent leaves. *Cor.* of one petal; tube bell-shaped, inflated, longer than the calyx; limb in ten roundish segments, of which the five inner ones are shorter. *Stam.* Filaments five, awl-shaped, inserted into the receptacle; anthers arrow-shaped. *Pist.* Germen superior, ovate; style the length of the stamens; stigma capitate. *Peric.* Berry roundish, pointed, of one cell. *Seed* solitary, roundish, cartilaginous.

Ess. Ch. Corolla in ten segments. Stamens inserted into the receptacle. Berry with one seed.

Obs. The germen contains the rudiments of several seeds, one of which only, for the most part, comes to perfection. Hence the embryo, naturally erect, becomes transverse from the altered position of the seed in ripening. See Brown’s *Prodr.* v. 1. 533.

Five supposed species of *Jacquinia* are defined by Willdenow, but of these one is indicated by Mr. Brown as a new genus, belonging to a very different order, the *Rubiaceæ*. This is *J. venosa* of Swartz’s *Prodromus*, omitted either by accident or design, in his *Flora Ind. Occid.* The place of

this, however, is supplied by a new species from the second edition of the *Hortus Kewensis*. They are all shrubby or arborescent, with rigid, smooth, entire, scattered leaves on short stalks, each with a pair of minute, awl-shaped, intra-foliaceous, deciduous stipulas, not always discernible. Flowers terminal, racemose or solitary, white, yellow, or orange-coloured, on smooth stalks.

1. *J. arborea*. Vahl. *Eclog. Amer. fasc. 1. 26.* Willd. n. 1.—Leaves obovate, somewhat wedge-shaped. Branches even; the lowermost quaternate; upper ones forked.—Found by Mr. Ryan in the island of Montserrat, on the sea coast in one place only, near the road called New Windward. A tree from four to 20 or 30 feet high, the trunk from six to eight inches thick, the branches scarcely swelling under their subdivisions, in which character and its greater size only it differs from the following, and they ought surely to be considered as mere varieties.

2. *J. armillaris*. Linn. Sp. Pl. 272. Jacq. Amer. 53. t. 39.—Leaves obovate, somewhat wedge-shaped. Branches swelling under their subdivisions; whorled below; forked above. Clusters many-flowered.—Native of the West Indies. A handsome shrub, seldom more than four or five feet high. Leaves two inches long, emarginate, sometimes with a minute point. Flowers about 20 in a cluster, the size of lily of the valley, white, smelling like jasmine. Berry as big as a pea, reddish orange. The Indians are said by Jacquin to make bracelets of the seeds, whence the specific name, and the leaves to intoxicate fish if thrown into the water.

3. *J. aurantiaca*. Ait. Hort. Kew. ed. 2. v. 2. 6.—Leaves obovate or lanceolate, with spinous points. Clusters of few flowers.—Discovered in the Sandwich islands by Mr. Archibald Menzies, by whom it was introduced into the Kew garden in 1796. It is kept in the stove and flowers most part of the summer. The upper leaves of each branch resemble those of the two foregoing, but the lower ones are smaller and almost lanceolate; every one of them is tipped with a rigid spine. The branches and stalks are slightly downy. Flowers orange-coloured, only three in the cluster of the only specimen we have seen, which is preserved in the Bankian herbarium.

4. *J. ruscifolia*. Linn. Sp. Pl. 271. Jacq. Amer. 54. Ait. Hort. Kew. ed. 2. v. 2. 6. (*Fruticulus foliis rusci stellatis*; Dill. Elth. v. 1. 148. t. 123. f. 149.)—Leaves all lanceolate, with spinous points. Flower-stalks simple.—Native of South America. Found by Jacquin in mountainous woods at the Havannah, flowering in January and February.—A rigid shrub, three feet high, with narrow, coriaceous, spinous-pointed leaves, whose form is like the lower leaves of the species last mentioned. The stalks are single-flowered, recurved as the fruit ripens.

A large variety, as it appears to be, of this species, received by Miller from Carthage, and called by that author in his Dictionary *Ruscus frutescens*, is preserved in the Bankian herbarium. Its larger leaves somewhat approach those of the *aurantiaca*, but the flower-stalks are simple.

5. *J. linearis*. Linn. Sp. Pl. 272. Jacq. Amer. 54. t. 40. f. 1.—Leaves linear, with spinous points. Flower-stalks simple, reflexed.—Native of the sea-shore near Port-au-Prince in Hispaniola, bearing flowers and fruit in January. Jacquin. Much smaller than any of the foregoing, with leaves scarcely more than an inch long. Flowers small, white, inodorous, on slender reflexed stalks.

JACRAH, in *Geography*, a town of Bengal; 35 miles S. of Burdwan.

JACTITATION of MARRIAGE. See MARRIAGE.

JACULATOR, or SHOOTING-FISH, in *Ichthyology*, is a species

a species of the *chatodon* in the Linnæan system, or the *CHÆTODON Rostratus*; which see.

JACULGONG, in *Geography*, a town of Hindoostan, in Dowlatabad; 18 miles S. of Oudighir.

JACULUM, or JACULUS, in *Zoology*, the name of a species of serpent, (the *ANGUIS Jaculus*;) found in Rhodes, and some other places, and more usually called *Acontias*; which see. It is found in Egypt, with the abdominal scales somewhat broader.

JACULUS. See *DIPUS Jaculus*.

JACUPEMA, in *Ornithology*, the name of a Brasilian bird of the pheasant kind, nearly as large as the common European hens. Its feet are of a fine red; it is a very well tasted fowl, and is easily kept tame. It has its name from the noise it makes, which is, *jacu, jacu, jacu*. Margrave. See *PENELOPE cristata*.

JACURSO, in *Geography*, a town of Naples, in Calabria Ultra; 8 miles W. of Squillace.

JACURUTU, in *Ornithology*, the *Bubo Magellanicus*. See *STRIX Bubo*.

JACUSI, in *Geography*, a town of Japan, in the island of Nippon; 25 miles N. E. of Achila.

JACUT, in the *Natural History of the Arabians*, is generally supposed to be the name of the ruby only; and it is owing to this, that among the gems used by the Arabian physicians in medicine, the ruby is supposed to have been most of all in esteem, as the name jacut oftener occurs in their writings than that of any other of the gems.

JACUT-AGA, is the name of an officer in the court of the grand seignior. He is one of two eunuchs who have the care of the treasure.

JACZIN, in *Geography*, a town of Poland, in Galicia; 34 miles S.W. of Halicz.

JACZINOW, a town of Galicia; 52 miles S. of Halicz.

JADDESSES, is the name of an inferior order of priests in Ceylon, who have the care of the chapels appropriated to the genii, who form a third order of gods among these idolaters. These priests are applied to by the people in a time of disease or calamity, who offer a cock on their behalf to appease the anger of the dæmons.

JADE, in *Natural History*. See *NEPHRITIC Stone*.

JADEL, in *Geography*, a town of Asiatic Turkey, in the province of Diarbekir; 20 miles N.W. of Rabba.

JADERA, in *Ancient Geography*, a town and colony of Liburnia, placed by Pliny 160 miles from Pola. We find references to it in the medals of Claudius and Justinian.

JADEVAR, in *Geography*, a town of Hindoostan, in Vissapour; 15 miles S.E. of Raibaug.

JADGEREM, or JAGEROM, a town of Persia, in the province of Chorasan. N. lat. 36° 23'. E. long. 55° 42'.

JADJAPOUR, a town of Bengal; 33 miles S.S.E. of Moorshedabad.

JADISPOUR, a town of Hindoostan, in Bahar; 21 miles W. of Arrah.

JADO, a town of Japan, in the island of Nippon; 5 miles S.E. of Meaco.

JADREKA, in *Ornithology*. See *SCOLOPAX Limosa*.

JADUNATPOUR, in *Geography*, a town of Hindoostan, in Bahar, on the Soane; 20 miles W.S.W. of Rotasgur.

JÆGERSPREIS, a town of Denmark, in the island of Zealand; 22 miles N.W. of Copenhagen.

JÆL, a town of Hindoostan, in the circar of Nagore; 16 miles N.E. of Nagore.

JAEN, a province of Spain, from which the king of Spain takes the title of king of Jaen, whence it is called a kingdom, and having been a kingdom in the time of the

Moors, till it was annexed to the crown of Castile: it is now comprehended under the government of Andalusia, and forms one of its divisions. It is about 60 miles from N. to S. and about as much from E. to W., itself mountainous and surrounded with mountains, which afford mines of lead, copper, and silver, and which separate it from the kingdoms of Cordova, Toledo, Murcia, and Granada. The river Guadalquivir divides it from the kingdom of Seville. The valleys of this province are merely such as have been formed by torrents of water; and the decomposition of the hills, not contiguous or connected, have at different periods produced those gaps and passes, which now form the roads in this petty kingdom, once the domain of a Moorish chieftain, and for a long period the theatre of chivalry, honour, and love. In the centre of this rugged kingdom, about $\frac{2}{3}$ of a league from the town of Linares, is a small plain situated in the most elevated part of the country, which affords an extensive prospect, comprehending Jaen the capital, as well as Andujar, Bæga and Ubeda. The hills at the extremity of this place are pierced like a sieve, with innumerable shafts and excavations, supposed to be the work of the Moors, from which they supplied the neighbouring states with silver, copper, and lead. The common or wild camomile is so common here, that the whole kingdom might be stocked with it; here is also plenty of game. The principal towns of this small kingdom are Jaen, Bæga, Ubeda, Caçorla, and Caßona.

JAEN, the capital of the above kingdom, is said by some to have been the Oningi of Pliny, and the Oringi of Livy, and, according to others, the Mentessa of the Romans. It is situated at the foot of a mountain of mixed marble, at the top of which the ruins of its antique castle are visible, a league from the river Guadalbeva, and two from the Guadalquivir. It is surrounded by walls, flanked with towers; contains some squares, one of which is spacious, and is formed by pleasant houses. It is well supplied with water, which is distributed by fountains in the squares, streets and houses. This city is the see of a bishop, suffragan of the archbishop of Toledo: its diocese contains two cathedral chapters, two collegiate chapters, seven arch-priests, and 438 parish churches. Besides the cathedral, which is a noble structure, and parish churches, Jaen has a great number of monasteries and nunneries, and two hospitals. The chapter of the cathedral is composed of eight dignitaries, 21 canons, 21 prebendaries, and 30 priests who serve the church. This city is the residence of the intendant of the province: it has a criminal judge, and a lord mayor for the administration of justice, a municipality composed of a determinate number of regidores, a board of economy, and a population of about 30,000 persons. Jaen was taken from the Moors by Ferdinand II. king of Castile, in 1243. It was formerly rich and commercial, and had a great number of silk manufactories; but these became almost extinct at the end of the 16th and beginning of the 17th century. An attempt was made to revive them about the middle of the 18th century; but few of them are now remaining. The environs of Jaen are extremely agreeable, abounding with delightful fertile valleys, and furnishing great quantities of corn, hemp, flax, pasture, and exquisite fruits. The lands belonging to the town yield the same productions, in still greater plenty: they are particularly planted with trees of every kind, and as there is no deficiency of mulberry trees, the silk-worm is raised; but it is an object very much neglected; 45 miles E. of Cordova. N. lat. 37° 53'. W. long. 3° 51'.

JAEN de Bracamoros, a province of South America, in the viceroyalty of New Granada. It is the most southern of the viceroyalty, and was subdued by Pizarro about the year

year 1540. In the mountains is found some gold; and the plains produce cotton, excellent chocolate, and tobacco.

Jaen de Bracamoros is also the name of a town, the capital of the above province, which was founded in the year 1549 by Diego Palomino. It is situated in the jurisdiction of Chaca-Inga, on the N. shore of the river Chinchipe, at its conflux with the Maranon, and is the residence of the governor. It lies in about $5^{\circ} 25'$ S. lat. and its longitude is nearly that of Quito. It contains between 3 and 4000 inhabitants, who are for the most part Mestizos, with some Indians, but very few Spaniards.

JAEPOUR. See JYENAGUR.

JAERSBORG, a town of Denmark, in the island of Zealand; 5 miles N.N.W. of Copenhagen.

JAJA, a territory of Arabia, surrounded by Aden, some part of the Imam's dominions, and the extensive province of Hadramaut. It is fertile, and abounds particularly in coffee and cattle. It was formerly under the dominion of the Imam; but in the end of the 17th century the inhabitants revolted, and became independent. They are governed at present by three sovereign princes, who have conquered also a part of Hadramaut. These princes are, the sultan of Resfes, who resides at Medsjeba, the sultan of Mofaka, who takes his title from the place of his residence, and the sultan of Kara, who resides in a castle upon the mountain of Kara. One of these sultans of Jaja likewise possesses Schahr, a sea-port town, from which incense, inferior in quality to that of India, is exported. Niebuhr.

JAFATIN ISLANDS, a cluster of small islands in the Red sea, near the coast of Egypt. N. lat. $27^{\circ} 10'$. E. long. $33^{\circ} 50'$.

JAFERI, a town of Persia, in Chorasan; 75 miles N.N.W. of Badkis.

JAFFA, YAFFA, YAFA, or YAFFÉ, the ancient *Joppa*, was formerly a considerable sea-port on the Mediterranean, and the only port which the Jews had on that sea. It was seated on a high hill, which commanded a full prospect of the sea on one side, and of a fertile country on the other. On the S. it had the town of Jamnia, on the N. Cæsarea Palestina, and on the E. Rama or Ramula. During the holy war, this city, so often mentioned both in the Old and New Testament, was so entirely ruined, that it had scarcely any buildings left besides the old castle, situated on an eminence above it, and another near the sea. The present town has been neatly rebuilt with stone, but on account of the inequality of its situation the streets are paved in steps. It is walled, and has two principal gates and a smaller one; the latter and one of the former yet remain; the other is shut up. It is commanded by an eminence on the N. within musket shot, where Ali Bey, when he besieged it, pitched his camp. Although it has a good wharf, ships cannot come up to it; nor has it any port or secure place of anchorage. This port, which is formed by a pier, and at present choaked up, might be cleared out, and made to contain vessels of 300 tons burden each. At present ships are obliged to cast anchor out at sea, at nearly a league's distance from the shore; where they are by no means safe, the bottom being a bank of rock and coral, which extends as far as Gaza. Yafa is the port at which the rice sent from Damietta to Jerusalem, the merchandize for a small factory at Ramla, and the commodities from the various ports on the coast of Syria, are landed. Here also the pilgrims from the Morea and Constantinople arrive; and here the spun cottons of Palestine, and other articles of trade, conveyed by sea, along the coast, are shipped. Although in its present state it does not deserve mention as a sea-port, or place of strength, it is capable of being made one of the most im-

portant on the coast, on account of two springs of fresh water which are within its walls, on the sea-shore, and which enabled it to make an obstinate resistance during the late wars. The air, formerly deemed infalubrious, has, by the draining of some adjacent marshes, been rendered perfectly healthy; and before the two late sieges, it was one of the most agreeable towns on the coast. Its environs were a continued forest of orange and lemon trees, citrons and palms, which here first begin to bear good fruit. The country at a greater distance abounded with olive trees as large as walnut trees: but in the sieges undertaken by Ali Bey and his successor Mahomed Abu-dhahal, the Mamlouks cut them down and used them for fire wood. It has thus lost its greatest convenience and ornament: but it was impossible to deprive it of the rivulets that water its gardens, and nourish the young suckers, which have already begun to shoot. This town has three small convents of Christians, Armenian, Greek, and Roman Catholic, and a few Jews. Yafa is one of the three appanages, or "Melkana," into which Palestine is divided, the other two being Loudd and Gaza. The former belongs to the Walda, or Sultana-Mother; and is held by an Aga, who pays to her 120 purfes. For this he receives the whole miri and poll-tax of the town, and some adjacent villages. But the chief part of his revenue arises from the custom-house, as he receives all the duties on imports and exports. The government is now mild; and the population, gradually increasing, may be estimated at 6 or 7000 souls. Jaffa, in the year 1799, was taken by the French, though not without considerable difficulty and bloodshed, but they held possession only 40 days. According to sir R. Wilson the conquest was followed by a massacre of 3800 prisoners, four days after the surrender of the town; and he informs us that 580 French soldiers, sick in the hospital, were poisoned with opium by command of the French general Bonaparte; 40 miles S. of Acre, and 40 miles N. of Gaza. N. lat. $32^{\circ} 2'$. E. long. $34^{\circ} 53'$. Volney's Travels, vol. ii. Browne's Travels, p. 359.

JAFFIERABAD, a town of Hindoostan, in the country of Berar, and cirar of Aurungabad, 40 miles N.N.E. of Aurungabad. N. lat. $20^{\circ} 22'$. E. long. $76^{\circ} 25'$.—Also, a town of Hindoostan, on the coast of Guzerat, and next to Diu, a place of the greatest trade on this coast. The town is surrounded by a wall for its defence. In a river near this town are found very large oysters. N. lat. $20^{\circ} 56'$. E. long. $70^{\circ} 36'$.—Also, a town of Bengal; 6 miles N.W. of Islamabad.—Also, a town of Oude; 7 miles S.E. of Hajypour.

JAFFIERGUNGE, a town of Bengal; 40 miles E.S.E. of Dacca.

JAFFNA, the capital of the district of Jafnapatam in the island of Ceylon, stands at the distance of some miles from the sea, but communicates with it by means of a river navigable with boats. The river falls into the sea near Point Pedro, where are a fort and harbour. The fort of Jaffna was given up by the Dutch to the British troops, as soon as they appeared before it. It is small, but exceedingly neat and well built. The Pettah, or Black Town, without the walls, which is of a quadrangular figure, is large and more populous than that of Trincomalee. Since Columbo was taken possession of by the English, several Dutch families have quitted it, and taken up their residence in the vicinity of Jaffna; as this latter place is much cheaper and better supplied with all the necessaries of life, several of which are scarcely to be procured in the other parts of the island. The inhabitants of Jaffna consist of a collection of various races. The greatest number consists of Malabars of Moorish extraction, who are divided into several tribes, known by the names of Lubbahs, Belahas, Mopleys, Chittys, Choliars, and a few Brahmins; they

they are distinguished by wearing a little round cap on their close shaven heads. There is also a race of Malabars found here somewhat differing in their appearance from those on the continent. These different tribes of foreign settlers greatly exceed in number the native Ceylonefe in the district of Jaffna. The Malabars are employed in manufacturing cotton, cloths, &c. The Chittys and Lubbahs trade in cloths, calicoes, handkerchiefs, &c. and go backwards and forwards to the continent to carry on this trade. The Lubbahs are Moors and Mahometans. The Belaias are numerous; they are chiefly husbandmen and attend to tillage and rearing cattle. These are extremely litigious and quarrellsome; and, although professed Christians, they observe scarcely any of the ordinances of our religion. They are in some measure Pythagoreans; and say when a child is born lame, blind, or dumb, that it was formerly the soul of a person, who must have deserved this punishment by his actions in a former state. They are extremely superstitious, and attached to many of the rites of Paganism.

The Choliars and Chivias do the hard work; are porters, palankeen bearers, and water carriers; though some are descended from the higher order, and will only carry the great men. The Panias and Pariars are the fishermen, as also the Mokkouas. The Nalloaus are the blackest of all the tribes. They gather the toddy from the cocoatrees, make arrack, tend the cattle, and are labourers and Coolies. The Pariars are accounted the lowest and most despicable. All these in some measure partake of the Ceylonefe customs and habits of life, mingled with their own. They inhabit various parts of the north-west coasts of Ceylon.

At Jaffna there is also a number of handicraftsmen, such as goldsmiths, jewellers, joiners, and makers of all different parts of household furniture. They are very expert in their respective operations; particularly that race known in this island by the name of Portugese, who surpass all the rest in the beauty and dexterity of their workmanship.

JAFFNOO, a kingdom of Africa, bounded on the N. by Sahara or the great desert, on the E. by Ludamar, on the S. by Kasson, and on the W. by Geduma. N. lat. 15° to $15^{\circ} 40'$. W. long. $7^{\circ} 40'$ to 9° .

JAFFRAY, a post-town of America, in Cheshire county, New Hampshire, on the S. side of the great Monadnock mountain, six miles N. of the Massachusetts line; incorporated in 1773, and containing 1341 inhabitants. Here are found red and yellow ochre, alum, vitriol, and black lead in great quantities: and also buck-bean or meny-anthes, reckoned useful in Medicine.

JAFFRYGUNGE, a town of Bengal; 43 miles N.E. of Purneah.

JAFNA. See **JAMNIA**.

JAFNAPATAM, a district of Ceylon, comprehending an oblong peninsula in the northern extremity of the island, almost cut off from the rest by a branch of the sea, which penetrates across the island, except that a small strip of land remains, which is nearly inundated at high water. This district looks directly towards Negapatam on the Coromandel coast, and is considered as the most healthy in the island: a circumstance which is ascribed to its being surrounded almost on all sides by the sea, by which means the violent hot winds from the continent of India are cooled in their passage. The fields, clothed with verdant pasture, exhibit a convincing proof of the temperate nature of the climate. Fruits, vegetables, game, and poultry abound every where in this district; and it seems that the atmosphere differs in some respect or other from that conti-

guous to other parts of the island; as it is only in the tract which lies between Point Pedro and Jaffna that sheep have been ever reared with success. The articles of commerce produced here are of no great value; the cinnamon and pepper being of an inferior kind to that which grows in the S.W. of the island. Jafnapatam was once a kingdom by itself, but was divided into several provinces. It is very populous, and has a great number of villages and churches, for all the various denominations of its inhabitants. The four lesser provinces contained in it are Beligame, Tennermarche, Waddermarche, and Patchiapalle. The Dutch built a church in 1658 at Telipoli, near a shady and pleasant grove. Several very good villages lie along this district, with churches and school-houses for educating the native children. The passage from Point Pedro to Negapatam on the opposite coast is usually made by boats in a few hours. The king of Jafnapatam built a small fort here against the incursions of the Moors and Malabars. It was taken by the Portugese in 1620, and lost by them in 1658. This was the last station retained by them in the island.

Dependent upon the district of Jaffna, and at a small distance in the sea to the north-west of Point Pedro, are several small islands, which the Dutch named from their own native cities, Delft, Haarlem, Leyden, and Amsterdam. These islands they employed in breeding horses and cattle, as from their excellent pasture they are better adapted to this purpose than any part of Ceylon. The English government continues the same system. The horses are bred under the superintendance of officers appointed for the purpose, and, when at proper age, are disposed of on account of government. Percival's Ceylon.

JAFRABAD, a town of Persia, in the province of Irak; 20 miles E.S.E. of Sava.

JAG, in *Mining*, signified formerly a drove or number of pack-horses, used for carrying ore, lead, &c.; and hence the carriers of ore for hire in Derbyshire are still called *jaggers*, although carts and waggons have long been substituted for pack-horses in this district. Jag or join of ale, is also a term among the miners here for a quantity of ale sent for by a party of them at their work.

JAGA, in *Geography*, a town of Africa, in the country of Kasson, on the south side of the Senegal. N. lat. 14° .

JAGA Calanda, a town of Africa, in the kingdom of Matamba; 70 miles N.W. Sta. Marin de Matamba.

JAGA Coconda, a country of Africa, S. of Benguela.

JAGAMI, a town of Japan in the island of Nippon, 80 miles N.W. of Meaco.

JAGANABATTA, a town of Bengal, 42 miles S.W. of Burdwan. N. lat. $22^{\circ} 35'$. E. long. $87^{\circ} 50'$.

JAGANATH, in *Hindoo Mythology*, a name of Vishnu and of Krishna; more generally applied to the latter, who, under the designation of Jaganatha, or lord of the universe, has a very celebrated temple dedicated to him in the territories of the raja of Berar. It is situated in the province of Cuttack, near the sea-shore in the bay of Bengal, and is annually visited by an immense concourse of pilgrims. It is said that all sects of Hindoos venerate the sanctity of this sacred temple, and resort thither in expiation, by ablutions, prayers, alms, and austerities, of sin, or in the hope of spiritual or temporal advantage; it may, however, be concluded that the pilgrims are chiefly of the sect who exclusively worship Krishna as the deity; which sect is called Gokalaitha; Gokal being another of Krishna's names. The extreme care with which Hindoos avoid eating with an individual of an inferior tribe, or partaking of food so prepared, is a well known fact; but an exception from its generality is said to obtain at Jaganath, where the high and low, the Brahman and the

Pariar, affociate and eat together. In the late war between the English and the Mahratta confederates, this temple, with the greater part of the province in which it is situated, fell into the hands of the former; but of course suffered no profanation: on the contrary, its sanctity was guarded with more than native vigilance; immunities were extended to pilgrims, and their approach to its holy precincts greatly facilitated. A similar policy at the sacred city of Benares has now for many years operated very favourably on the English character. While under Hindoo government, a heavy toll was imposed on the entrance of individuals, and this toll or tax was arbitrary, in reference to the supposed wealth of the visitor. This, as may be supposed, gave rise to much vexation and injustice. Its abolition was a very popular measure, and has contributed, among other causes, to render Benares one of the most populous and wealthiest cities in the world. See BENARES.

JAGARESTÉ, in *Geography*, a town of Thibet; 180 miles N. of Fyzabad. N. lat. 29° 38'. E. long. 81° 30'.

JAGARNAUT, a town of Hindoostan, in the province of Cuttack, famous for a grand pagoda, which lies a few miles E. of Chilka lake, and close on the sea-shore. (See JAGANATH.) It is an excellent sea-mark, on a coast that is perfectly flat and uniform. It has no claim to great antiquity; but major Rennell supposed, that it succeeded the temple of Sumnaut in Guzerat, which was destroyed by Mahmood in the 11th century.

JAGAS, or GIAGAS, savages of Africa, in the kingdom of Congo, (which see,) of whose cruel practices Cavazzi has given an account, that would be hardly credible, if it were not well authenticated. The women often expose their own children to wild beasts. Some of the Jaga princes take pleasure in eating young women, and their favourite dish is a fœtus cut from the womb; and a princess is said to have been so fond of her gallants that she ate them successively. The laws of the Jagas, called "quixillas," present a horrible code of vice and cruelty, being certainly the only national code ever enacted for these brutal purposes. Their most delicious beverage is warm human blood. Indeed, the cruelty of the Jagas surpasses all description. Queen Zinga tore her own son from her breast, and bruising him in a mortar, formed a horrible banquet, which continued to be made in the same manner of the bodies of babes. Being regarded as a sovereign charm, the Jaga chieftain, Casfangi, used to have a young woman killed every day for his table; and she was often selected, who had passed the night in his bed. Zinga ordered that all her officers, before they proceeded on an expedition, should exercise the conjugal mysteries in public, in the midst of a solemn assembly with the wife or concubine, who was the most favourite object of their love. The slaves among the Jagas die in a certain expectation of a similar but happier existence in another world; and it is esteemed an act of generosity to kill a beautiful female at the tomb of a friend: the Singhillas, or priests and magicians, are singularly despotic, and while they enforce the laws on others, esteem themselves free from their observance. As after a battle the bodies are claimed, each warrior is understood to wound in a particular part that he may select his prey. The women, by the account of the author above cited, are as ferocious as the men, and delight to cleave the skull and suck the warm brains of the slain. Five or six strong men will at once destroy and share a captive, by cutting where their portions begin, and tearing him in pieces. But the above relation affords a sufficient specimen of their savage manners and conduct.

JAGERNDORF, in *Geography*, a principality of Silesia, originally part of Troppau, and first established as a distinct

principality in favour of duke Nicholas V: but ceded, at the peace of Berlin in 1742, by Maria Theresa, queen of Hungary and Bohemia, to Frederick II. of Prussia.—Also, the capital of the above principality, situated on the Oppa, containing two churches and a convent; 12 miles N.W. of Troppau. N. lat. 50°. E. long. 17° 40'.

JAGERSBURG, a town of Brandenburg, in the New Mark; 15 miles E. of Arenswald.—Also, a town of Hesse-Darmstadt; 13 miles S.S.W. of Darmstadt.

JAGHAUS, a town of Germany, in the Tyrolse; 14 miles N.W. of Schwaz.

JAGHIRE, a term in India, which denotes a grant of land from a sovereign to a subject, revocable at pleasure; but generally, or almost always for a life rent. Hence are derived "jaghiredars," or holders of jaghires: their titles to their possessions being nominally during their life-time only, though some of them in the Mahratta state have long since become hereditary. This term "Jaghire" is applied to the East India company's lands in the Carnatic, extending from Madras to the Pullicate lake, northward; and to Alem-parvé, southwards; and westward, beyond Conjeveram: that is, about 108 British miles along shore, and 47 inland, in the widest part. This Jaghire is understood to be held in perpetuity. It contains about 2440 square miles; and its revenue is reckoned at about 150,000*l.* per annum.

JAGIPOUR, a town of Hindoostan, in Bahar, on the left bank of the Ganges; 48 miles E.S.E. of Hajypour.

JAGNEVO, a town of European Turkey, in Servia; 8 miles S. of Priltina.

JAGNIDE, *Ital.* See HYAGNIS.

JAGO, in *Geography*, a town of Africa, in Guinea, on the river Formosa; 70 miles from the sea.

JAGO, *St.* the capital of the kingdom of Chili. See SANTIAGO.

JAGO, *St.* a town of the island of Cuba, which was formerly its capital, but of late much reduced from its former splendour, is situated at the distance of 269 leagues from Havannah, in a hilly country, subject to slight earthquakes. It lies near the south coast, on a bay, about six miles from the sea: the haven is spacious and secure, the entrance being by a channel two leagues in length, defended by a castle at the extremity. The women are regarded as the most handsome in the island. It is the see of a bishop, suffragan of St. Domingo. N. lat. 20° 15'. W. long. 75° 32'. See CUBA.—Also, a town of Mexico, in the province of Guaxaca; 45 miles E.S.E. of Guaxaca; which see.—Also, a river of Mexico, which runs into the Pacific ocean, N. lat. 22° 30'. W. long. 106°.—Also, a town of New Mexico, in the province of New Leon.—Also, a town of California; 120 miles W. of Loretto.—Also, a town of Paraguay; 154 miles S. of Assumption.—Also, a river of Peru, which runs into the Pacific ocean, N. lat. 1° 20'.

JAGO, *St.* or *Santiago*, the chief of the Cape Verd islands; it is one of the most fertile and best cultivated, about 40 British miles in length, by 20 in breadth. Although it has many mountains, it has been reckoned the most unhealthy of these islands. The people are generally black, or of a mixed colour; a few of the better rank excepted. The principal production of this island is cotton; and the chief fruits are grapes, plantains, citrons, lemons, oranges, musk and water melons, limes, guavas, pomegranates, quinces, custard-apples, papas, and other tropical fruits. Its animals are cows, horses, asses, mules, deer, hogs, goats, and black-faced monkeys with long tails. Of the feathered birds there are cocks, hens, ducks, Guinea hens, parroquets, parrots, pigeons, turtle-doves, crab-catchers, curlews, and many of them valuable for their plumage. The population of this

island is estimated at about 12,000 persons. When it was visited by sir George Staunton in November, 1792, in his voyage to China, the island was in a state of absolute famine. Little or no rain had fallen there for three years before, the rivers were almost entirely dry; the surface of the earth was in general destitute of any herbage; the greatest part of the cattle had already perished, not less through drought than want of food. Of the inhabitants many had emigrated, and many were famished to death. The plains and fields, formerly productive of corn, sugar-canes, or plantains, nourished by regular falls of rain, now bore little semblance of vegetation. Of the island of St. Jago, the south-west side only had any appearance of volcanic formation. About two miles from Praya bay is a very high hill, altogether composed of clay and sand, on which appeared not the least marks of the action of fire. About six miles, near the road, from the town of Praya to that of St. Jago, is another hill, almost entirely composed of rich iron stone, of a deep blue or purple colour, formed of clay, calx of iron, and siliceous earth. In the rocks opposite the governor's house, near Praya, are several narrow perpendicular veins of white spar. The beach is covered with a fine siliceous sand. The Portuguese maintain no force at St. Jago, capable of insuring a proper respect to their flag there; and so far are they from drawing any revenue from the place, that supplies are sent to it from Portugal. A trade for slaves from Africa is established at St. Jago; and that trade is a monopoly to the crown. The governor derives his chief profit from the sales of cattle to the ships which call there; and of the amount of these sales he claims a moiety. Such is the state of the inhabitants, that they altogether depend for a supply of whatever their own island cannot afford, upon vessels casually stopping there. They set little value upon money, which might long lie useless in their hands; preferring to barter whatever they have to sell, for a return, principally of corn or clothing, rather than any quantity of specie that would be offered to them. The water obtained here is neither good nor easy to be had. The chief towns are St. Jago and Praya. N. lat. 15° 4'. W. long. 23° 40'.

JAGO, St., Ribera, or Riveira, a town of the above-mentioned island, and formerly its capital, is situated in the bottom of a vale, between an elevated plain, on the boundary of which is a fort in ruins, which was originally designed to defend the steep descent towards the town, and a high hill opposite to it. This vale seemed to have been scooped out by the force of a violent torrent, rolling along with it great rocks which stood in its passage, and emptying itself with them into the sea. There a small, irregular, and unsafe harbour was formed by these rocks, while the current itself is diminished into a stream, so small and sluggish, that it cannot clear its mouth from the sands which the tide throws in, and by which it is almost choked up. On each side of this little stream are remains of dwellings of considerable solidity and size; and the fragments of glass lustres, still hanging from the ceilings of the principal apartments, denote the elegance or riches that were once displayed in this now deserted place. It had formerly 300 houses built of rough stone, a church, and a convent. But sir George Staunton, who visited it in his "Embassy to China" says, that not above half a dozen families remained in it; the rest had abandoned it, or perished. He adds (vol. i. p. 135.) here was still, however, an attempt at a slight manufactory of striped cotton slips, the same as are made in other parts of the island, for the use of the Africans on the Main, who pay for them in slaves, elephants' teeth, and Arabic gum. The governor now resides at Porto Praya, which is frequented by the ships that, for commercial or other purposes, touch at this island. See PORTO PRAYA.

JAGO de los Cavallos, St., a town of the island of Hispaniola; 90 miles N. of St. Domingo. N. lat. 19° 36'. W. long. 70° 52'.

JAGO de Compostella, St. See COMPOSTELLA.

JAGO del Estero, St., a town of South America, capital of the country of Tucuman, and see of a bishop; situated on the banks of the Dolce, which is here large and navigable for vessels of burthen, and which affords great plenty and variety of fish. The town contains about 300 houses, or 500 families, and is destitute of walls, ditch, or other fence. The inhabitants are mostly mestizos and mulattoes, of a dark yellow complexion, indolent and sickly from the heat of the climate, and more addicted to pleasure than labour. Surrounded with forests, and situated on a plain, the town suffers from a stagnation of air. It has hardly 300 men fit for bearing arms. The women, who are generally handsome, are troubled with swellings or wens in the throat. The adjacent country produces plenty of wheat, rice, barley, and all sorts of fruits, particularly figs and raisins. The forests, which yield abundance of game, are infested with tygers and other beasts of prey; 650 miles N.N.W. of Buenos Ayres. N. lat. 27° 46'. W. long. 65° 12'.

JAGO de Gutagaya, St., a town of Peru, in the diocese of La Plata, and chief town of the jurisdiction of Chicas, under the government of Buenos Ayres; 80 miles S. of Potofi.

JAGO de Leon, St., See CARACCAS.

JAGO de los Montanas, St., a town of South America, in Quito; 10 miles N.W. of St. Francisco de Borja.

JAGO Sanaher, St., a town of South America, in the province of Buenos Ayres, on the Parana; 25 miles S. of Corrientes.

JAGO de los Valles, St., a town of Mexico, in the province of Guasteca, on the river Panuco; 60 miles S. of Panuco. N. lat. 22° 40'. W. long. 100° 36'.

JAGO de la Vega, St. See SPANISH TOWN.

JAGO de Veragua, St., a town of Mexico, and capital of Veragua, situated in a fertile country, abounding with maize, plantains, &c. and plenty of cattle. It contains an elegant hospital, and is the seat of a governor, whose authority extends over 14 towns and villages; 110 miles S.W. of Porto-Bello. Nat. lat. 8° 40'. W. long. 81° 46'.

JAGO, St. Military Order of. See ST. JAMES of the Sword.

JAGODINA, in Geography, a town of European Turkey, in Servia, on a small river, which runs into the Morava; 60 miles S.S.E. of Belgrade. N. lat. 45° 15'. E. long. 20° 56'.

JAGOLEEAH, town of Bengal; 21 miles N.N.E. of Calcutta.

JAGOTPOUR, a town of Hindoostan, in Oude; 16 miles N. of Manickpour.

JAGOVAT, a town of Persian Armenia; 12 miles N. of Erivan.

JAGRA, or *JAGGERY*, a name given to a peculiar species of sugar, prepared from the cocoa-nut. This is prepared in Ceylon from a liquor called "toddy," procured, by incision, from the top of the tree where the leaves shoot up; a slit is made in this part of the tree with a knife over night, and a "chatty," or earthen pot, suspended from the branches so as to receive the juice, which immediately begins to distil, and continues to do so till next morning, when the pot is removed. This liquor, when drank before the heat of the rising sun has caused it to ferment, is very wholesome and cooling, and operates as a gentle purgative. But upon being fermented it becomes intoxicating; and in this state is well known to the European soldiers, who use it in large quantities when they cannot procure the arrack distilled from it. Arrack in Ceylon is wholly made from toddy, and whole woods of

the cocoa-tree are employed for the purpose of procuring it. A barm or yeast arises from this process, equal to that which is procured from our malt liquor employed in the preparation of whisky. The toddy is likewise made into vinegar, and yields a species of coarse black sugar known by the above name.

JAGRA, or *Giara*, in *Geography*, a country of Africa, producing plenty of rice, cotton, and corn, a little S. of the river Gambia; about 50 miles from the sea.

JAGRAH, a town of Hindoostan, in the circar of Nagore; 15 miles N. of Nagore.

JAGRENATPOUR, a town of Bengal; 10 miles N.W. of Purneah.—Also, a town of Bengal; 20 miles W. of Islamabad.—Also, a town of Hindoostan, in Bahar; 65 miles S.S.E. of Hajypour.

JAGUA, a town of the island of Cuba; 85 miles W.S.W. of Havannah.

JAGUACAH-GUACU, in *Ornithology*, the name of a Brazilian bird of the king-fisher kind, called by the Portuguese *papa péixe*. See **ALCEDO** *Alecyon*.

JAGUARA, in *Zoology*. See **FELIS Onca**.

JAGUARACA, in *Ichthyology*, the name of a Brazilian fish, in many things resembling the scorpius of the Mediterranean. It is of the size of the fresh-water perch, and its mouth is very large, but without teeth. It is caught among the rocks, and is a very well tasted fish. Margrave.

JAGUARETE, in *Zoology*. See **FELIS** *Difcolor*.

JAGUILMA, in *Ornithology*, a species of *Pittacus*; which see.

JAIL. See **GAOL**.

JAIL-Fever, in *Medicine*. See **FEVER** and **TYPHUS**.

JAHANABAD, in *Geography*, a town of Bengal; 20 miles S. of Burdwan. N. lat. 22° 55'. E. long. 87° 55'.

JAHANAGUR, a town of Bengal; 10 miles W. of Kishenagur.

JAHEDHIANS, a sect of Mahometans, the followers of Amru Ebn Bahr, surnamed Al Jahedh, a great doctor of the Môtazalites, and much admired for the elegance of his compositions, who differed from his brethren in imagining that the damned would not be eternally tormented in hell, but would be changed into the nature of fire, and that the fire would of itself attract them, without any necessity of their going into it. He also taught that if man believed God to be his Lord, and Mohammed the apostle of God, he became one of the faithful, and was obliged to nothing further. Of the Koran, he used to say it was a body, which might sometimes be turned into a man, and sometimes into a beast; seeming to agree with the notion of those who assert the Koran to have two faces, one of a man, the other of a beast; thus probably intimating the double interpretation which it will admit of, according to the letter, or the spirit.

JAHI, in *Geography*, a town of Asiatic Turkey, in Nalolia; 16 miles N.N.E. of Angura.

JAHNU, in *Hindoo Mythology*, is called the father of the Ganges, from an extravagant story of an austere sage, named Jahnu, having been disturbed at his devotions by the intrusion of the river. In anger he swallowed the whole stream, but, relenting, poured it forth again from an incision in his thigh, or, according to others, from his ear. Ridiculous as this wild story may seem, it has probably some historical allusion, for it is generally admitted that both the history and science of the Hindoos are veiled in mythological fables, taken literally by the people, the Brahmins only possessing a knowledge of their real import. This fable of Jahnu is frequently alluded to in Hindoo writings, and affords considerable scope for poetical exuberance. Moor's Hindoo Pantheon.

JAHNUVI, a name of the river Ganges, or Ganga, as it

would be more properly written. The river obtained this appellation, which means the offspring of *Jahnu*, from the circumstance above mentioned.

JAHUPICE, in *Geography*, a town of Poland, in the palatinate of Braclaw; 48 miles S.E. of Braclaw.

JAICZA, a town, with a castle, of European Turkey, in Bosnia, near the river Pliva; 26 miles S. of Banjaluka.

JAICZI, a town of Great Bucharia, on the Jihon; 36 miles S. of Bokhara.

JAIMINI, in *Philosophy*, the founder of a school in India, professing tenets similar in many parts to those taught by Socrates. Jaimini inculcated the unity of the deity, rejecting the stories, so generally received by many sects of Hindoos, of the incarnations of deities. He maintains that the great powers and attributes of the deity Brahma, Vishnu, and Siva (personifications, of creation, preservation, and destruction), were men, who, through righteousness, attained a high degree of perfection, and were endowed by the deity with qualities approaching to his own attributes. His followers call this doctrine Purva Mimansa, distinguishing it from another branch of Jaimini's philosophy called Vedanta, between which discrimination is not easy. (See **VEDANTA**.) Mimansa is the general name for the philosophy of Jaimini, which is upheld by many learned Hindoos. It teaches the eternity of the elements, and of the universe; that bodies are only a compound of atoms, and not produced from one substance; that man is a free agent; that rewards and punishments hereafter differ in degrees, according to virtue or sin. The transmigration of the soul is also a tenet in the Mimansa philosophy. See **MIMANSA**.

JAINA, the founder of a sect, whose tenets have spread very extensively over India. By some authors the sect of Jaina, or Jina; as it is sometimes written, is supposed to be a subdivision of that of Budha, or Boodha (see **BOODHA**), while others contend for its originality and antiquity over most other of the sects into which the Hindoos are theologically subdivided. Between the Jainas and the Brahmans, a degree of malignity appears to have existed formerly, greater than is now any way discernible. Abu'l Fazel, in the *Ayin Acbaree*, a work written about the year 1600, A.D. has the following passage: "From the most ancient times down to the present, the learning and wisdom of Hindoostan have been confined to the Brahmans and the followers of Jaina; but ignorant of each other's merits they have a mutual aversion. Krishna, whom the Brahmans" (of his own sect, he should have added, for it is not true of them universally) "worship as God, the Jainas consider as an infernal slave; and the Brahmans carry their aversion so far as to say, that it is better to encounter a mad elephant than to meet a man of this persuasion." This mutual malignity led to the horrible excesses of religious persecution, inflamed by the jealousy of rivalry, and the baser feelings of hatred and revenge.

In these conflicts the Jainas are related to have suffered most disastrously from the superior prowess and address of the Brahmans and their adherents, who destroyed the temples, books, &c. of their ill-fated opponents, expelling the remains of the sect to the confines of India. Such, however, is the tenacity of heresy, cemented, as it were, by perfection, that the followers of Jaina are now found to have re-established themselves in the more central parts of the peninsula of India, where the mildness of their manners and tenets appears to gain them proselytes and respect. It is, however, on the western coasts of the hither peninsula that this interesting people have of late been most noticed by travellers. In the provinces of Kanara and Myore, particularly in the former, Jainas in considerable numbers now freely

freely practise the ceremonies of their religion, and unmo-
 lested indulge in their whimsical, and extravagantly inoffensive
 propensities. Their leading tenet is "the sin of depriving
 any animal of life," and in obedience to this humane pre-
 cept, they not only abstain wholly from animal food, but
 some among the stricter individuals will not drink water
 until it hath been boiled; it being deemed less criminal to
 kill the animalculæ than to destroy them in their stomachs.
 Others carry a broom to sweep the ground on which they
 tread or sit, lest they inadvertently crush an insect. The
 Jainas are the sect who endow the hospitals for animals and
 reptiles, that have attracted the attention of several tra-
 vellers. These hospitals are called Pinjri-pala, meaning an
 enclosure of protection, and afford it to almost every de-
 scription of animal, monies more especially; weevils and
 other diminutive reptiles are nursed in these receptacles of
 ill-directed charity. The Jainas are deists in doctrine; they
 worship one supreme being under the denomination of Ar-
 hang Paramatma, which in the Sanscrit language means
 the supreme soul; they reject the polytheism and incar-
 nations of the orthodox Hindoos, but they honour, almost to
 deification, twenty-four holy persons whom they call Ary-
 huntas, of whom images are made and placed in their tem-
 ples. Of these Aryhuntas, or Tirthunkaras, as they are
 otherwise denominated, Rishaba Deva is the first in point
 of time and veneration. To him are ascribed the exist-
 ing books of their laws, religion, and morals: of these sacred
 persons and books lists are given, with many curious par-
 ticulars respecting the Jainas of Guzerat, in Moor's Hindoo
 Infanticide. All the Aryhuntas have the common deno-
 mination of Deva, meaning divine, or God-like, appended
 to their names. Among the Jainas the division into tribes
 or *castes* is not observable as among other Hindoos; Yati
 and Sravaka being their only distinctions. The former are
 a sort of priest, or rather spiritual preceptor, who read and
 expound to the Sravakas or laity, the Sastras or scriptures
 of the Jaina faith. The Yatis are devoted to religion from
 their infancy, and are admitted to this distinction after a due
 course of study and piety. They profess celibacy and ab-
 stinence, reciting a verse said to comprize their duties:
 "that person who keeps his five senses under subjection is a
 Yati;" this denotes the Yati with the Jainas to be equi-
 valent to a Saniasy among the orthodox Hindoos. (See
 SANIASY.) The Yati lives by charity; he may not dress
 his food himself, nor eat while the sun is below the horizon;
 roots of all sorts, honey and butter unclarified, are prohi-
 bited; all kinds of grain, vegetables, and fruit, produced
 above ground, with milk and ghee, or butter clarified, are
 lawful food. The Yati is supposed to have renounced the
 world and all sensual gratifications; he affects a contempla-
 tive indifference, performing no offices of mourning or re-
 joicing. The Yati performs no religious rites; he is merely
 an ascetic and spiritual guide. The Sravakas resort to
 some sects of orthodox Brahmans for the performance of
 marriage, funeral, and other ceremonies. See SRAVAKA
 and YATI.

The Jainas, like the other Baudhas, or adherents of Budha,
 are addicted to gigantic sculpture. In the province of
 Kanara is a colossal figure of Jaina-deva, of a magnitude un-
 equalled perhaps by any now in existence. Of this statue
 major Moor has given a description and a plate in his Hindoo
 Pantheon. It is upwards of seventy feet in height, and
 being situated on an eminence, called Indra-giri, or the hill
 of Indra, is seen in all directions from a distance of twelve
 or fifteen miles. Major Moor's print is taken from a sketch
 in the collection of lord Wellington, who has visited the
 statue, and judged that the hill on which it now seems to

stand, was once considerably higher, and that it has been
 cut away, leaving only the figure; a mode of sculpture
 similar, although under different circumstances, to the sub-
 terranean excavations of Elephanta, Kenereh, and other
 temples. It is, major Moor observes, difficult to conceive
 how in any other mode such a mass of stone could have been
 so situated, its magnitude precluding the supposition of con-
 veyance and erection. Other colossal figures of the Jainas
 of Kanara are described and represented in the Hindoo Pan-
 theon; also a very beautiful obelisk, 52 feet in height, the
 shaft of one stone, in front of one of their temples, indi-
 cating a degree of taste and refinement in architectural sci-
 ence, that could scarcely be expected under the political
 and theological discouragements to which the persecuted
 Jainas are believed to have been subjected. One singularity is
 strikingly observable in all the images, colossal or dimi-
 nutive, of the Baudhas and Jainas; they have woolly frizzled
 heads, and many of them thick lips; such as might be
 expected in Africa, but altogether dissimilar to the features
 and lank hair of the Hindoos. See on the subject of this
 article Asiatic Researches, vol. ix. Moor's Hindoo Pan-
 theon. Moor's Hindoo Infanticide.

JAINAD, in *Geography*, a town of Hindoostan, in the
 circar of Mahur; 38 miles N. of Neermul.

JAIRE, ST. a town of France, in the department of
 the Leman; 15 miles S.E. of Geneva.

JAK in *Jakko*, a town of Africa, on the Ivory coast.

JAKA, a kingdom of Africa, 500 miles from the sea,
 with a capital of the same name, on the S. side of the Se-
 negal.—Also, a town and district of Africa, on the Ivory
 coast.

JAKAI, a town of Circassia; 45 miles W. of Eski-
 kefek.

JAKIN, a town of Africa, in the kingdom of Ardra,
 on the Slave coast, where the English and Dutch had fac-
 tories, till they were driven away by the king of Dahomy.—
 Also, a river which separates the country of Ardra from
 Benin, and runs into the sea at Grand Popo.

JAKIRA, a town of Africa, on the Slave coast; 10 miles
 S. of Assom.

JAKOBHAVN, a Danish settlement in Greenland.

JAKOWIZINA, a town of Russian Poland, in the pala-
 tinate of Braclaw; 36 miles W.N.W. of Braclaw.

JAL, a town of Persia, in the province of Meccran; 210
 miles N. of Kidge.

JALA, a small island in the Atlantic, near the coast of
 Africa. N. lat. 11° 45'.

JALAC, a town of Nubia, at the conflux of the Ta-
 cazé and Nile; 240 miles S. of Sennaar. N. lat. 17° 50'.
 E. long. 34° 10'.

JALALABAD, a town of Candahar, in the country
 of Cabul, on the river Kameh; 60 miles E.S.E. of Cabul.
 N. lat. 34° 6'. E. long. 69° 45'.—Also, a town of Hin-
 doostan, in the circar of Schaurunpour; 26 miles from
 Schaurunpour.

JALALGUNGE, a town of Bengal, and principal place
 of the province of Bajoohow; 25 miles N.N.E. of Goragot.
 N. lat. 25° 28'. E. long. 82° 30'.

JALALPORUM, a town of Hindoostan, in the circar
 of Schaurunpour; 20 miles N.N.W. of Merat.

JALAMLAM, a town of Arabia; 35 miles S. of
 Mecca.

JALANGHI-LIMAN, a town of Asiatic Turkey, in
 Natolia; 12 miles S. of Smyrna.

JALAP, in the *Materia Medica*, so called from the name
 of the country, *viz.* Chalapa, or Xalapa, a province in New
 Spain, between La Vera Cruz and Mexico, whence it is
 brought,

brought, the root of a species of the convolvulus, or the convolvulus with variable leaves, foot-stalks with single flowers, and a tuberous root. Botanists have differed much with respect to the official jalap plant; Linnæus, following Clusius, Plumier, Tournefort, and others, first referred it to the *Mirabilis*; but in the second edition of his *Materia Medica*, he adopts the opinions of Ray and Miller, in considering it a convolvulus; and, indeed, after the account given of this plant by Dr. Houston, no reasonable doubt can remain on this subject.

The mechoacan and this are reckoned of a species; and therefore as this is sometimes called *mechoacana nigra*, that goes as often by the name of *jalapium album*.

As jalap does not appear to have been known to the ancients, it has its place in medicine only since those parts of America, which produce it, have been traded to by the Europeans. It is said to have been first brought to Europe about the year 1610.

The jalap roots are brought over in thin transverse slices, and also whole, of an oval shape, solid, hard, and heavy; of a blackish colour on the outside or cortical part, and internally of a dark greyish, with several black circular striæ; the hardest, darkest coloured, and those which have the most of these resinous veins, are the best. This root has scarcely any smell or taste; but to the tongue and the throat it manifests a slight degree of pungency.

The medicinal activity of jalap resides principally, if not wholly, in the resin, which, though given in small doses, occasions violent tormina. The gummy part bears an inconsiderable proportion to the resinous, and is found to have little or no cathartic power, but as a diuretic it is extremely active.

In doses of a scruple, or half a dram, it is an effectual and safe purgative, very rarely occasioning any severe gripes or nausea. Jalap is an excellent purgative in dropical and other cases, in which serous humours are to be evacuated. Jalap, in large doses, or when joined with calomel, is recommended as an anthelmintic and a hydragogue; and from its general efficacy in dropics was called "*Panacea Hydropticorum*." Hoffman thought it particularly improper and unsafe to administer this medicine to children; but Dr. Cullen observes, that if jalap be well triturated before exhibition with a hard powder, and the crystals of tartar are the fittest for the purpose, it will operate in lesser doses than when taken by itself, and at the same time very moderately, and without griping. Except, he says, when given in very large doses, I have not found it to be heating to the system; and if it be triturated with a hard sugar, it becomes, in moderate doses, a safe medicine for children, which in this form they will readily receive, as the jalap itself has very little taste. But it should not be administered, says Geoffroy, in acute fevers, nor to persons of dry and hot constitutions; for in such cases, it is liable to the same mischiefs as other acid purgatives, and will sometimes bring on heat and inflammations in the viscera.

The preparations of jalap in use with us are a tincture, an extract, and a resin. The tincture is made by macerating eight ounces of jalap root powdered in two pints of proof spirit for 14 days, and straining. The extract is prepared by first drawing a tincture from the powdered root with rectified spirit, in the proportion of a pound of the root and four pints of the spirit, macerating the root in the spirit for four days, and pouring off the tincture; then boiling the residuum in ten pints of water, until it be reduced to two pints; then strain the tincture and decoction separately, and let the former be distilled, and the latter evaporated until each begins to grow thick. Lastly, mix the extract with

the resin, and reduce it to a proper consistence. Let the extract be kept in a soft state fit for forming pills, and in a hard state so that it may be reduced to powder. This extract may be taken by itself in doses of twelve grains, or more. Jalap root, digested in as much rectified spirit as will cover it to the height of about four fingers, gives out the greatest part of the resinous matter in which its activity resides, and tinges the menstruum of a yellowish brown colour. On inspissating the filtered tincture to about one-half, and adding to the remainder a proper quantity of water, the liquor becomes milky, and on standing deposits the pure resin. This preparation, by itself, irritates and gripes much, without proving considerably purgative; but thoroughly triturated with testaceous or other powders, or with soap, or ground with almonds, or powdered gum arabic, and made into an emulsion with water, or dissolved in rectified spirit, and mixed with a proper quantity of syrup, that the solution may bear being diluted with watery liquors without precipitation, it purges, in doses of eight or ten grains, as effectually, and, for the most part, as mildly as the jalap in substance. Lewis's *Mat. Med.*

The Edinburgh college directs the exhibition of jalap in powder, with twice its weight of crystals of tartar. The dose of the simple powder is commonly from one scruple to two; of the compound powder it may be double this quantity, which is nearly equal to 10 or 15 grains of the extract, or about two drams of the tincture. Woodv. *Med. Bot.*

After all the preparations the chemists have invented for this root, the best way of giving it is in substance. Mr. Bolduc, in his analysis of it, found, that when he separated its saline and its resinous parts, by making extracts of it, first with spirits of wine, and then with water, that the saline or watery extract was much larger in quantity than the other, but that it purged weakly; and that the resinous extract, though it operated in a small dose, was yet a very rough medicine; so that the best way of using them was together, and that nature gave us the medicine ready prepared. *Mem. Acad. Par. 1701.*

However, others have observed, that the extracts of jalap appear preferable to the root in substance, not only on account of the dose being rendered smaller by the rejection of the woody parts, but likewise as being more uniform and certain in strength. Lewis.

Many fraudulent chemists, when jalap is dear, have a trick of putting scammony, which is of itself almost all resin, among it, and sometimes gamboge; by which means they can afford to sell it cheaper than the price it can be honestly made for. But their most curious cheat is in mixing it with the common black resin; two parts of the latter to one of the former. But this may be known by putting it into rectified spirit, which will again dissolve the resin of jalap, but not touch the other. The virtues are the same with those of the root, but it works rougher, because all substances stick to the coats of the intestines, so as to occasion much pain and uneasiness; for which reason this is corrected with sugar, cream of tartar, or the like; by which means it is brought into the same state as nature presents it in the root. For some purposes, indeed, where the form is required to be small, as often in administration to children, this is most convenient. Its dose is from three grains to one scruple.

Jalap possesses a fermenting power in a considerable degree, and is said to be used with this intention by brewers and distillers.

JALAPA, in *Botany*. See CONVOLVULUS and MIRABILIS.

JALASJARVI, in *Geography*, a town of Sweden, in the government of Wafa; 40 miles E.N.E. of Christine-stadt.

JALEA, a town of Asiatic Turkey, in Natolia; 12 miles S.W. of Adramitti.

JALEH, a kind of raft of a particular construction, used in navigating some of the rivers in India, particularly the Cabul or Kameh, on which some of the emperors have made voyages down this river from the neighbourhood of Jalalabad, 60 or 70 miles below Cabul, to Pafshawur. As no embarkations of the hollow kind are in use, it seems to prove that the navigation is interrupted by rapids; for there can be no doubt but that the body of water in the Kameh is sufficient to carry boats.

JALEMGORY, in *Geography*, a town of Hindoostan, in the circar of Sollapour; 18 miles E. of Sollapour.

JALEMUS, *Ἰαλέμιος*, or **JALEMIA**, in *Antiquity*, a kind of mournful song used upon occasion of death, or any other affecting accident; such as the Linos was among the Greeks, and the Maneros among the Egyptians. (See *SONG*.) Hence the Greek proverbs had their original, *ἰαλέμιος οἰκιστέρος*, or *ψυχοτερος*, i. e. *more sad or colder than a jalemus*, *ἢ τις ἰαλέμιος ὑπεραπτεος*, *worthy to be ranked among jalemuses*. Mem. Acad. Inscript. tom. xiii. p. 554.

JALI, in *Geography*, an island in the Grecian Archipelago, about five miles in circuit; four miles S.E. of Stanchio.—Also, a town in the island of Borneo; 70 miles N. of Negara.

JALIGNY, a town of France, in the department of the Allier, and district of La Palisse; 15 miles S.E. of Moulins. The place contains 482, and the canton 8114 inhabitants, on a territory of 280 kilometres, in 12 communes.

JALLA, a town of Hindoostan, in Bahar; 18 miles N.N.W. of Durbungah.

JALLACOTTA, a town of Africa, in the country of Tenda; 10 miles W. of Tenda. N. lat. 13°. W. long. 12° 9'.

JALLAIS, a town of France, in the department of the Mayne and Loire; 7 miles N. of Chollet.

JALLAS, a river of Spain, which runs into the Atlantic, N. lat. 42° 59'. W. long. 9° 12'.

JALLINDAR, a circar of Hindoostan, in the country of Lahore, of considerable extent, between the rivers Setledge and Beyah.—Also, the capital of this district; 30 miles E. of Lahore. N. lat. 31° 16'. E. long. 75° 25'.

JALLOFFS, or **YALLOFFS**, a people inhabiting an extensive interior territory of Africa, between the rivers Gambia to the south, and the Senegal to the north and east; or between about 14° and 16° N. lat. and 13° and 15° W. long. Of these people little certain is known; but they are represented as of an exceeding black, and more beautiful complexion and more regular features than the inhabitants of the neighbouring countries.

JALLONKADOO, an extensive country of Africa, lying between Guinea on the S.W. and Manding on the N.E. and containing either the springs or first courses of the rivers Niger and Senegal, and also of several other streams which form the Boki, Furkoomah, Wonda, Koloro, &c. It is between the parallels of 11° and 12° N. lat. and 6° and 9° E. long.

JALLYNE, a town of Bengal; 20 miles W. of Nagore.

JALOAN, a town of Hindoostan, in the circar of Gohud; 10 miles N.N.E. of Kooch.

JALOAR, a town of the Carnatic; seven miles N. of Ootatore.

JALONITZA, a town of European Turkey, in Wala-

chia, on a river of the same name; 95 miles S.W. of Ifmail.

JALOUR, a large town of Hindoostan, situated on a mountain difficult of access, in the country of Agimere, and circar of Sirowy; 63 miles W.N.W. of Oudipour. N. lat. 25° 15'. E. long. 73° 40'.

JALOWKA, a town of Lithuania, in the palatinate of Troki; 24 miles S. of Grodno.

JALPUG, a lake of European Turkey, in Bessarabia, 30 miles long, and from three to five broad, communicating with the Danube, and receiving water from a river called by the same name at Tabak; 15 miles W. of Ifmail.

JALYSUS, or **JALISSUM**, in *Ancient Geography*, a town situated on the N.W. coast of the island of Rhodes; founded, according to Herodotus, by the Danaides, and fortified on occasion of the Peloponnesian war.

JAM, a town of Greater Bucharica; 10 miles S. of Samarcand.

JAM, or *Jamb*, in the language of our lead-miners in Mendip, a thick bed of stone, which hinders their work when they are pursuing the veins of ore.

JAMA, in *Geography*, a river of Peru, which runs into the Pacific ocean, S. lat. 9° 10'.

JAMACAI, in *Ornithology*. See *ORIOLOUS Jamacaii*.

JAMADA, in *Geography*, a town of Japan, in the island of Xicoco; 20 miles W. of Ovtli.

JAMADAGNI, in *Hindoo Mythology*, is the father of Parafu Rama, by his wife Runeka. (See *RUNEKA*.) He was a pious Brahman, who, in his retirement, was entrusted by Indra with the charge of Surabhi, the wonderful cow, which granted every desire, hence named also Kam-denu. (See *SURABHI*.) On a particular occasion he entertained the raja Diruj in so magnificent a stile as to excite his astonishment, until he learned the secret of the inestimable animal possessed by his host. Impelled by covetousness, or rather heart-hardened by the gods, who willed the raja's punishment should appear to be the immediate result of that base passion, the raja demanded the cow from the holy Brahman; and on refusal resorted to stratagem and force, which ended in the death of Jamadagni, but not in success with respect to the cow, which disappeared. Jamadagni is stated to be descended from Bhrigu the son of Brahma, and is one of the seven Rishis, the immediate offspring of the creative power. Meor's Hindoo Pantheon. See *RISHIS* and *MENUS*.

JAMADSUKURI, in *Geography*, a town of Japan, in the island of Nippon; 50 miles S.W. of Nambu.

JAMAGA, a town of Japan, in the island of Ximo; 22 miles E. of Udo.

JAMAICA, an island of the West Indies, discovered by Christopher Columbus in his second expedition to the New World, May 3, A. D. 1494, retaining its original name. The early Spanish historians for Jamaica wrote Xay-maca, which in the language of the nation is said to have signified "a country abounding in springs." Columbus having at first named the island "St. Jago," Oldmixon, and some other writers, erroneously suppose that Jamaica was the augmentative of James. It was not, however, till about nine years after its first discovery that he had an opportunity of acquainting himself further with the island; in consequence of a storm which compelled him, on the 24th of June 1503, on his return to Hispaniola from Veragua, to seek refuge in a small harbour on the N. side, called to this day "Don Christopher's Cove." About seventeen years elapsed after the Spaniards had first fixed themselves in Hispaniola before they seem to have entertained any serious design of sending forth a colony to take possession of Jamaica; and the neglect of it was probably owing to its producing
neither

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neither gold nor silver. At length, however, Diego, the son of the much injured Columbus, and the heir of his fortunes, instituted a memorable process against his sovereign before the council of the Indies at Seville, and obtained from this court a decision in favour of his pretensions. The council pronounced him hereditary viceroy and high admiral of all the countries and islands discovered by his father. Diego, thus sanctioned in his proceedings by the high authority of this court, embarked, with a splendid retinue, for his government of Hispaniola, to which the king had reluctantly appointed him; determined at the same time to enforce his pretensions. In July 1508 he arrived at Hispaniola, where he found two persons actually invested by the king with two separate governments, that comprehended the whole continent discovered by Christopher Columbus, including also the island of Jamaica. Diego, thus deprived of his rights, strenuously contended for the exclusive privilege of nominating, in particular to the governments of Veragua and Jamaica, the prior discovery of both these countries being a circumstance of universal notoriety. For securing his claim to Jamaica he sent thither, in November 1509, Juan de Esquivel with about 70 men. Under this gallant and equally humane commander, the natives were induced to submit without effusion of blood, and prosecuted their labours in planting cotton, and raising other commodities which yielded great profit. After a few years he died, and was succeeded by governors of a very different character, who contributed to destroy the inhabitants and to desolate the island. Sixty thousand of the wretched natives, on the most moderate estimate, were exterminated by the Spaniards; so that not a single descendant of either sex appeared to be alive when the English took the island in 1655, nor perhaps for a century before that period. It is said, indeed, that a small remnant of the ancient Indians exists on the S. side of the island of Cuba, in a little town called St. Jago de Cuba, or Iwanee, and that these have adopted the manners and language of the Spaniards. Diego Columbus, who died in his native country in 1525 or 1526, left issue three sons and two daughters; his eldest son Don Lewis succeeded to his father's honours and extensive claims; and in 1545, upon a compromise of a contest with the emperor, obtained a grant of the province of Veragua and the island of Jamaica. As he and his brothers died without issue, his sister Isabella, who was married to the Count de Gelvez, a Portuguese nobleman of the house of Braganza, became sole heiress of the Columbus family, and by her marriage conveyed all her rights to the house of Braganza, in whose possession they remained till the year 1640, when they reverted by forfeiture to the crown of Spain, in consequence of the revolution, which placed John, duke of Braganza, on the throne of Portugal. From circumstances recited in minute detail by Mr. Boyan Edwards, it appears that during the protectorate of Cromwell, the Spaniards had been guilty of several aggressions in the West Indies, and that the protector, in seeking redress, manifested a regard to justice by his moderation and temper. An appeal was at length made to force; and a powerful armament was equipped, which miscarried at Hispaniola, but succeeded at Jamaica, which was carried by the English forces in May 1655. At this time the whole number of white inhabitants on the island, including women and children, did not exceed 1500: and not one hundredth part of the plantable land was in a state of cultivation. The number of negroes, who had been first introduced from Africa by the Spanish settlers after they had exterminated the original proprietors, nearly equalled that of the whites, at the time of its capture. The principal exports of the Spanish planters, notorious for their sloth and pe-

nury, consisted, besides cacao, of hog's lard and hides, which supplied the few ships that touched at their ports with provisions, in barter for European manufactures; and this constituted the whole of their commerce. After the capture of the island, until the restoration of Charles II., the English in Jamaica remained under military jurisdiction, although it appears to have been the intention of Cromwell to have established a civil government in the island on very liberal principles. After the restoration of Charles II., the Buccaneers, who resorted to this island, and who contributed by their wealth and industry to its settlement and opulence, received from the king every kind of encouragement and protection; and people of all professions, and from all parts of the British empire, now resorted to Jamaica. In 1661 the king appointed D'Oyley, chief governor of the island; and he was ordered to release the army from military subordination, to erect courts of judicature, and, with the advice of a council, to be elected by the inhabitants, to pass laws suitable to the exigencies of the colony. These events may be considered as the first establishment of a regular civil government in Jamaica after the English had become masters of it. Soon after D'Oyley desired to be recalled, and lord Windsor was appointed in his room with instructions to publish, on his arrival, a royal proclamation, in which, for the settlement of the country, allotments of land were offered under such terms as were usual in other plantations, with such further privileges and immunities as the grantees should reasonably require. The proclamation contained other declarations, which have been always considered, by the inhabitants of Jamaica, as a solemn recognition and confirmation by the crown of those rights which are unalienable from a subject of England, and of which, so long as he maintains his allegiance, emigration for the benefit of the state cannot, and ought not to divert him. These rights and privileges were further secured by the American treaty, concluded and signed at Madrid in the month of June 1670. Such, however, were the want of integrity and steadiness, characteristic in too great a degree of Charles II., that in the beginning of 1678, Jamaica was involved in the troubles of this reign. A new system of legislation was adopted for this island similar to that of the Irish constitution under Poyning's act; and the earl of Carlisle was appointed chief governor for the purpose of enforcing it. A body of laws was prepared by the privy council of England; and a bill was offered to the assembly for settling a perpetual revenue on the crown. In future the heads of all bills (money bills excepted) were to be suggested in the first instance by the governor and council, and transmitted to his majesty to be approved or rejected at home; they were then to be returned under the great seal in the form of laws, and passed by the general assembly, which was to be convened for no other purpose than that and the business of voting the usual supplies; unless in consequence of special orders from England. The assembly rejected the new constitution with indignation. No threats would frighten, no bribes could corrupt; nor arts nor arguments persuade them to consent to laws that would enslave their posterity. In consequence of this opposition, the assembly had their deliberative powers restored to them; and sir Thomas Lynch was appointed captain-general and chief governor in the room of lord Carlisle. The English government claimed a return from the people of Jamaica for having relinquished an oppressive and pernicious project; but the assembly, averse from subjecting their country to a permanent and irrevocable tax, determined to pass their supply bills from year to year, according to their usual custom. The ministry, influenced by a kind of vindictive policy, advised the sovereign to waive the confirmation of the laws, and to

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suffer the administration of justice in the island to remain on a very precarious foundation. In 1728 a compromise was happily effected. The assembly consented to settle on the crown a standing irrevocable revenue of 8000*l.* per annum on certain conditions, to which the crown agreed. The principal of these conditions are as follow: *viz.* that the quit-rents arising within the island, then estimated at 1460*l.* per annum, should constitute a part of such revenue; that the body of their laws should receive the royal assent; and that all such laws and statutes of England, as had been at any time esteemed, introduced, used, accepted, or received, as laws in the island, should be and continue laws of Jamaica for ever.

Jamaica is situated in the Atlantic ocean, about 4000 miles S.W. of England; having Hispaniola, at the distance of 30 leagues, to the E.; the island of Cuba, about the same distance, N.; the gulf of Honduras, W.; and Carthage, on the great continent of South America, S. at the distance of 145 leagues. The centre of Jamaica lies in about 18° 12' N. lat., and about 76° 45' W. long. The climate, though much mitigated by various causes, is extremely hot, with little variation from January to December; the days and nights are nearly equal, the longest and shortest day differing no more than about two hours with little twilight; and it is twelve at noon in London, when it is about seven in the morning in Jamaica. The north and south sides of the island, which are separated by a vast chain of mountains, extending from E. to W., differ greatly from each other. Columbus, when he first discovered Jamaica, on the northern side, and perceived that part which now constitutes the parish of St. Anne, was struck with admiration at the novelty, variety, and beauty of the prospect. At a small distance from the shore, the country rises into hills with gentle acclivity, which are separated from each other by spacious vales and romantic inequalities; and is beautifully covered with groves of pimentos, forming by their deeper tints a charming contrast to the verdure of the subjacent turf. The soil is in general a chalky marl, which produces a close turf, as smooth and even as the finest English lawn, and in colour much brighter. No part of the West Indies abounds with so many delicious streams; every valley having its rivulet, and every hill its cascade. On the southern side of the island the scenery is of a different nature; its predominant feature being grandeur and sublimity, whilst the other side presents variety and beauty. Amidst precipices and inaccessible cliffs, however, there are vast plains, clothed chiefly with extensive cane-fields. To the inequalities of surface that distinguish this island, it is owing that, although the soil in many parts of the island is deep and very fertile, yet the productive land is but of small extent, in proportion to the whole. That which is actually cultivated is of a middling quality, and requires labour and manure to make it yield liberally.

Jamaica is 150 miles in length, and at a medium about forty miles in breadth. Calculating from these data, the island, if it were a level country, would contain 3,840,000 acres; but allowing for that great part of it which consists of high mountains, and supposing, at a moderate estimate, the increase on that account to be $\frac{1}{10}$ th more; or 240,000 acres, the total is 4,080,000 acres. Of these no more than 1,907,589 were, in November 1789, located, or taken up, by grants from the crown; and consequently, upwards of one-half of the lands is considered as of no kind of value, the expence of taking out a patent being of no great account; and of the located lands, Mr. Edwards supposes that little more than one million is at present in cultivation. In sugar plantations, including the land re-

served in woods, for the purpose of supplying slaves, timber, and fire-wood, or appropriated for common pasturage, all which is commonly two-thirds of each plantation, the number of acres may be stated at 639,000. Of breeding farms, called "pens," the number is about 400, and allowing to each 700 acres, the whole amount is 280,000; and the space allowed to the minor productions, as cotton, coffee, pimento and ginger, &c. including even the provision plantations, may be estimated at no more than one-half of the extent assigned to the pens. The result of the whole is 1,059,000 acres, leaving upwards of three millions an unimproved, unproductive wilderness. The mountains, however, are generally covered with extensive woods, containing excellent timber; such as the lignum vitæ, log-wood, iron-wood, pigeon-wood, green-heart brazilletto, and bully-trees, all of which are to a great degree heavy, as well as compact and impenetrable. Some of these are necessary in mill-work, and would be highly valuable in the Windward islands. Of softer kinds, for boards and shingles, the species are innumerable; and there are many beautiful varieties for cabinet-work; and among these we may enumerate the bread-nut, the wild-lemon, and the well-known mahogany. Jamaica is not only abundantly wooded, but well watered; the number of its rivers being reckoned at above 100. It has also a variety of medicinal springs. Formerly, it is said, the Spanish inhabitants had mines both of silver and copper; but the present occupiers employ their industry more profitably on the surface than in digging into the bowels of the earth. The most important of its present natural productions are sugar, indigo, coffee, and cotton. The several species of grain cultivated in this island are, maize, or Indian corn, producing usually two crops in the year, and sometimes three; Guinea-corn, producing one crop in the year, planted in September, and gathered in January following, yielding from 30 to 60 bushels an acre; and various kinds of calavances, a species of pea; and rice, but in no great quantity. The island abounds also with different kinds of grass, of excellent quality: the artificial grass, called "Scott's grass," grows spontaneously in most of the swamps and morasses of the West Indies; and it is so productive, that a single acre of it will maintain five horses for a whole year. The "Guinea-grass" is next in importance to the sugar-cane, as the grazing and breeding-farms are chiefly supported by it. Hence arises the plenty of horned cattle, both for the butcher and planter; which is such, that few markets in Europe furnish beef of better quality, and at a cheaper rate, than that of Jamaica. Mutton also is cheap and good. The seeds of the Guinea-grass were brought from the coast of Guinea, as food for some birds which were presented to Mr. Ellis, chief justice of the islands. The several kinds of kitchen-garden productions, that are known in Europe, thrive in the mountains of this island; and the markets of Kingston and Spanish town are supplied with cabbages, lettuces, carrots, turnips, parsnips, artichokes, kidney-beans, green peas, asparagus, and various sorts of European herbs, in the greatest abundance. Other indigenous productions that may be classed among the esculent vegetables, are plantains, bananas, yams of several varieties, calalaa (a species of spinach), eddoes, cassavi, and sweet potatoes. Among the more elegant fruits of the island we may reckon the anana or pine-apple, tamarind, papaw, guava, sweet-sap, cashew-apple, custard-apple, cocoa-nut, star-apple, grenadilla, avocado-pear, hog-plum, pindal-nut, nesbary, mammee, mammee-sapota, Spanish gooseberry, prickly pear, and some others, for which Jamaica is probably indebted to the bounty of nature. For the orange, the lemon, lime, shaddock, vine, melon, fig, and pomegranate, the West India islands are perhaps obliged to their

their Spanish invaders. The cinnamon has been lately introduced, and the mango is become almost as common as the orange. In 1773 a botanic garden was established in Jamaica, and in 1782 its valuable exotics were much increased.

This island is divided into three counties, *viz.* Middlesex, Surry, and Cornwall, which see respectively; and these three counties include twenty parishes, in which are eighteen churches and chapels; each parish being provided with a rector, and other church officers, and the presentation to each living being lodged with the governor or commander-in-chief. The supreme court of judicature for the whole island is held in the town of St. Jago de la Vega, the capital of the county of Middlesex, in which court the chief justice of the island presides, whose office is worth about 3000*l.* per annum. The assistant judges are gentlemen of the island, commonly planters, who receive for their attendance no recompence. From this court an appeal lies in civil actions for 300*l.* or upwards to the governor and council, as a court of error. Assize courts are also held every three months, in Kingston for the county of Surry, and in Savanne-la-Mar for the county of Cornwall. The governor, or commander-in-chief is chancellor by his office, and presides solely in that high department; he is also the sole ordinary for the probate of wills and granting letters of administration. The office of enrollments, or of secretary of the island, which is an office of record, is important and lucrative; it is held by patent from the crown, and exercised by deputation. Its emoluments exceed 6000*l.* sterling per annum. The provost-marshal-general is also an officer of high rank and great authority, and held by patent from the crown. This acting officer is high-sheriff of the whole island, and his legal receipts have been known to exceed 7000*l.* sterling a-year. The office of clerk of the supreme court is also held by patent, and exercised by deputation: some years ago its value exceeded 9000*l.* currency. There are several other lucrative appointments, held by patent or commission; and it is computed that not less than 30,000*l.* sterling is remitted annually by the deputies in office within the island to their principals in the mother country. The legislature of Jamaica is composed of the captain-general or commander-in-chief, of a council nominated by the crown, consisting of twelve gentlemen, and a house of assembly, containing 43 members, who are elected by the freeholders. All bills passed in this assembly have the force of laws as soon as the governor's assent is obtained; but the power of rejection is still reserved in the crown.

The revenues of the island are partly *perpetual* by an act of the year 1728, and partly *annual*, depending on grants of the legislature. The revenue law may raise about 12,000*l.* per annum, of which 8000*l.* is particularly appropriated, and the surplus is applicable to the contingent expences, in aid of the annual funds. The governor receives 2500*l.* per annum out of the 8000*l.* fund: and a further salary of 2500*l.* is settled upon him, during his residence in the island, by a special act of the legislature. The annual funds may amount to 70,000*l.*, of which about 40,000*l.* is a provision for granting an additional pay to the officers and soldiers of his majesty's forces stationed for the protection of the island. The current coins in Jamaica are Portugal pieces of gold, called the half-johannas, valued in England at 36*s.* each; which pass, if of full weight, at 55*s.* Spanish gold coins current are doubloons at 5*l.* 5*s.* each, and piltoles at 26*s.* 3*d.* Silver coins are Spanish milled dollars at 6*s.* 8*d.*, and so in proportion for the smaller parts of this coin: the lowest coin is called a *bitt*, equal to about 5*d.* sterling. A guinea passes for 32*s.* 6*d.* The number of white inhabitants was computed

in 1780 at 25,000; but having since increased, Mr. Edwards supposes that, including the troops and sea-faring people, their number may be fixed at 30,000. The freed negroes and people of colour were computed in 1788 at 500 in each parish on an average; which makes 10,000 exclusive of the black people called Maroons. These amount to about 1400. Of negroes in a state of slavery, the precise number in 1787 was 210,894, and including those who are fraudulently not returned, this number may be augmented to 250,000. The whole number of inhabitants of every description is therefore estimated at 291,400. Mr. Edwards reports, from the books of the inspector-general of Great Britain, that the trade of Jamaica, in 1787, employed 400 vessels, containing 78,862 tons, navigated by 8845 men; that the total value of the exports from the island to various parts from January 5th, 1787, to January 5th, 1788, amounted to 2,136,442*l.* 17*s.* 3*d.*; and that the total value of the imports amounted to 1,496,232*l.* 5*s.* 4*d.* or by certain allowances necessary to be made, to 1,648,018*l.* 14*s.* 4*d.* sterling. Jamaica, says Mr. Edwards, had now nearly attained the meridian of its prosperity. The total of sugar plantations in all the parishes of the island are stated by this author to have been, in 1789, 710, and the number of negroes employed in them 128,798. The number of its coffee plantations has very considerably increased; for in 1774 the export of coffee was 654,700*lbs.*, and in 1790, 1,783,740*lbs.* The exports consist of sugar, rum, molasses, pimento, coffee, cotton wool, indigo, ginger, cacao, tobacco, mahogany, logwood, hides, and several miscellaneous articles. The imports consist of British manufactures, foreign merchandize from Great Britain, salted provisions from Ireland, formerly negroes from Africa, salted cod, &c. from the British colonies in America; from the United States, Indian corn, wheat flour, rice, lumber, slaves, &c. in British ships, from Madeira and Teneriffe wine: Mr. Edwards gives the following statement of the value of this island, considered as British property:—250 negroes at 50*l.* sterling each, amounting to 12½ millions; the landed and personal property to which these negroes are appurtenant, (including the buildings,) are moderately reckoned at double the value of the slaves themselves; making 25 millions in addition to the 12 millions 500 thousand before stated; and in further addition the houses and property in the towns, and the vessels employed in the trade, are valued at one million 500 thousand pounds more: amounting in the whole to 39 millions of pounds sterling. Edwards's Hist. West Ind. vol. i.

JAMAICA, a township of America, in Windham county, Virginia, watered by several branches of West river, and containing 263 inhabitants.—Also, a post-town and capital of Queen's county, New York, on the W. part of Long island, containing a Presbyterian, Episcopalian, and Dutch church, an academy, and nearly 100 dwelling-houses: 12 miles E. of New York city; the whole township contains 1661 inhabitants.—Also, a town of Africa, in the island of York, built by a Mulatto, the son of an Englishman, where the English have a factory.

JAMAICA *Pepper.* See PIMENTO.

JAMAICA *Wood.* See BRAZIL.

JAMALGUNGE, a town of Bengal; 42 miles S. S. E. of Dinagepour.

JAMAMA, or IMAM, a town of Arabia, the capital of a district in the province of Nedsjed, situated on a river, which runs into the Persian gulf, and famous for being the birth-place of a prophet, named Moseilama, who existed before the days of Mahomet. N. lat. 25° 5'. E. long. 46° 31'.

JAMANASSIRO, a town of Japan, in the island of Niphon; 65 miles N. W. of Jedo.

JAMARD, in *Biography*, an ingenious and worthy ecclesiastic, who was, before the Revolution, a canon regular of St. Genevieve, prior of Roquefort, member of the Academy of Sciences, Belles Lettres, and Arts at Rouen; and who published in 1769, at Paris, in 8vo. "Recherches sur la Theorie de la Musique," or an Enquiry into the Theory of Music. The work is purely theoretical; and strictly confined within the limits of harmonics, or division of the musical scale. The author has, unluckily, given offence to the patriotic musicians of France, still exclusive admirers of Lully and Rameau, by the following reflection. "It is astonishing that the Italians, who adhere strictly to no regular system or theory of sound, should compose better music than we do, who are in possession of such excellent principles of harmony;" but M. Laborde, strongly attached to the old school, by no means admits the fact. "In the first place, so far from granting that the Italians produce better music than we (the French) it is certain, on the contrary, that our's, with respect to harmony, is much superior to that of the Italians, and that we allow their superiority in nothing but the musical drama, or opera, which is not tied down to such rules as music properly so called, nor regarded in general as amenable to the laws of counterpoint.

"In the second place, it is necessary to observe, that almost all the Italians compose by rote and by feeling, according to the method of their several schools. Very few of them have ever studied the theory, or have the least idea of the principles on which it is founded. We must allow, however, that this is the case with most practical musicians, they seem to think theory a science totally independent on practice. There is no practice, however, safe or exempt from error but by the knowledge of the principles of harmony, and the rules that flow from those principles. We will allow, if you please, that the Italians are superior to us in melody; but they must grant that we are their masters in harmony, and that we write in a manner much superior to them in accuracy, purity, and elegance." All this is very fine and honourable to France, but will the rest of Europe subscribe to M. Laborde's decisions? and will it be believed that no good music ever *has* been composed or *can* be, by persons unacquainted with Rameau's system of the fundamental base? or that all the great masters of Italy who have produced such admirable works were ignorant of harmony? But we must not forget M. Jamard's theory in this discussion. This ingenious author has not only pushed calculation by the division of the monochord into all the diatonic, chromatic, and enharmonic intervals; but to the most minute shades of sound possible; even to the warbling of birds, the sliding the finger up and down the string of a violin, or the incalculable tones of speech. The worst that can be said, perhaps, of this labour is, that its use and application are not obvious. But a serious objection by nice ears will be urged against the author's making so imperfect an instrument as the French horn the guide and umpire of the diatonic scale, of which the 4th and 6th are so intolerably false and out of tune, that "the ploughman whistling o'er the furrow'd land" would not deform his wild melody by such a scale. But though the *whole* system of M. Jamard may be inadmissible and impracticable, as much ingenuity and science are manifested in these calculations as could possibly be expected from a mere mathematician, totally unacquainted with practical music and its effects.

JAMAS, in *Geography*, a town of Japan, in the island of Ximo; 12 miles S.W. of Udo.

JAMATA, a town of Japan, in Nippon; ten miles W.S.W. of Jedo.

JAMBA, in *Ancient Geography*, a town of Asia, in Ba-

bylonia; according to Ptolemy, situated near a marsh towards Arabia Deserta.

JAMBA, in the *Mythological Romances of the Hindoos*. This is the name of a bear with whom Krishna and others of their deified heroes had adventures; ridiculous, if taken literally, but reasonably imagined to be merely a veil for physical or scientific facts. See **JAMBAVANTA**.

JAMBAVAN, or **JAMBHUVAN**, the name of a bear expeccorated by Vishnu, as related in the legends of the Hindoos, for the purpose of aiding Rama in the wars of Lanka or Ceylon. On this occasion most of the gods and demigods of the Hindoo pantheon were called upon by Vishnu to assist Rama, himself indeed incarnate, against the giant king Ravana, as detailed at great length in that curious poem the Ramayana, by Valmiki, which has not yet been translated. See **RAMAYANA** and **RAVANA**.

JAMBAVANTA. In the Sni Bhagavata, or Life of Krishna, estimated by the Hindoos as the eighteenth Purana (see **PURANA**), a number of adventures are related in which a bear acts a conspicuous part under the name of Jambavanta. In Vishnu's anantara, or incarnation in the person of Rama, a bear likewise under nearly the same name is introduced. Some astronomical allusions are imagined to be hidden under these sylvan allegories. Krishna is the sun, he attacks and overcomes the bear, retiring with the daughter of his adversary: this may refer to the sun's approach to, and receding from, the northern tropic; Jambavanti being, it is supposed, a personification of Urfa major.

JAMBAVANTI, a female bear, daughter of Jambavanta, espoused by Krishna, as related with many similar apparently idle tales, in the Puranas and other romances, sacred and profane, of the Hindoos.

JAMBEAUX, among our *Old Writers*, armour for the legs. The word is French, from *jambe*, the leg.

JAMBEK, in *Geography*, a town of Sumatra, which is the capital of a state, and situated on a large river, both of the same name; the town is distant from the sea on the eastern side of the island about 60 miles. This was formerly a place of considerable note, and both the English and Dutch companies had establishments there. The trade consists in gold dust, pepper, and canes, but it is now esteemed of little importance; the gold being mostly drawn to the western coast across the country. S. lat. 1° 24'. E. long. 103° 39'.

JAMBER, a small island in the Atlantic, near the coast of Africa. N. lat. 10° 21'.

JAMBIA, in *Ancient Geography*, a town of Arabia Felix, on the Arabic gulf, according to Ptolemy. It was situated near the Elanitic gulf.

IAMBIC FOOT, or **IAMBUS**, in *Metre*, consists of two syllables; the first, short; the second, long ~; as "χων preces, around."

"Syllaba longa brevi subiecta vocatur iambus,
Pes citus." Hor. de Art. Poet. 251.

Several derivations of this word are given by ancient authors, but none of them have much probability. (See Schol. on Hephæstion, p. 157 and 169. edit. Gaisford. Etym. Magn. Sch. on Nicander. Euitath. on Od. 11. p. 1684. Diomedes, p. 473.) The most probable one is from *ἰαμω*, to aim at, or attack. Aristotle (Poet. § 4. Winstanl.) and Strabo (l. 9. § 10.) derive it from *ἰαμω*, to satirize; but I cannot find that this word was ever used before the invention of iambic verse; or that in later authors it was ever used without some reference to it. When Gorgias said that Plato καλῶς εἶδεν ἰαμω, he meant that he could

IAMBIC VERSE.

could defame as well as a writer of iambics; and with the same allusion he called him *another Archilochus*. (See Athen. 11. 505. d.) The passage in which *ἰαμβοποιήσας* occurs in Aristot. Poet. (§ 22. see Tyrwhitt's note,) has been misunderstood by all his commentators. It should be read *ὄν Ευκλείδης ὁ ἀρχαῖος (δικακμήδης τὸν ποιητὴν) ὡς ἰζῶν ποιῆν, εἴ τι Μοῦση βασιλεῖν ἐδ' ἀπόσον βούλεται ἰαμβοποιήσας ἐν αὐτῇ τῇ λέξει*; that is, *having made an iambic verse in the very expression*. It is more probable, therefore, that *ἰαμβοποίησις* was derived from the verse, than the verse from it.

Iambic Verse, is that which consisted principally of iambic feet. The Greeks used a great variety of forms of this verse, either separately, or intermixed with other verses. (See Schol. on Hephaest. p. 167.) It was measured by dipodix or double feet. When they used therefore a single iambic foot as a verse, it was called

Iambic Monometer Brachycatalectic, for which was used any foot of two syllables, except a trochee. Soph. Œd. Col. 117. 149. El. 856. 867. edit. Brunck.

An *Iambic Men. Catal.* consisted of an amphibrach or a bacchius. (Soph. Aj. 873. 897. 1205. El. 1237. 1258. Œd. Col. 123.) This was sometimes intermixed with iambic trimeters. Soph. Œd. t. 1468. Trach. 865. Œd. c. 1271.

Iambic Monom. called also an *iambic basis*, consisted of two iambic feet; and admitted, instead of the first iambus, a tribrach, or a spondee, or a dactyl, or an anapæst. Eur. Phœn. 312. Or. 979. Soph. El. 127. 1232. Œsch. Suppl. 278. Perf. 1043. (See Burney's Pref. to Œsch. p. 16.) Aristoph. Nub. 1103. Ach. 276. It is prefixed by Aristophanes (Eq. 380. 455. 939.) to an iambic dimeter catal. at the end of a system of iambic dimeters.

Iambic Monom. Hypercat. or *Iambic Penthemimer*, admitted the same varieties in the first foot. Eur. Hec. 919. Soph. Aj. 599. Œsch. Perf. 641. (See Burney, p. 25. and 80.) The last syllable was either long or short.

Iambic Dimeter Brach. admitted a tribrach also in the second foot. Soph. El. 857. 1246. Œd. t. 667. 696. Arist. Eq. 386. Pind. Ol. 4. ult. Pyth. 8. Str. 8. Isthm. 7. Str. 8. See Herm. Comm. de Pind. Metr. v. 3. p. 216. Heyn.

Iambic Dim. Cat. called by the Scholiast on Nicander *Hemianb.* (Gaisford, p. 246.) Soph. El. 1241. 1262. Aristoph. Ach. 1223. He often closes a system of dimeters with this verse (Eq. 381. 456. 940.), and often intermixes them. (Ach. 1010. 1039.) In the second place he generally preserves an iambus (Herm. de Metr. p. 145.); but he has a tribrach in Ach. 1039; and an anapæst, Nub. 1104. The *Anacreontic verse* is referred by Hephaestion to this metre. It consisted of two different systems; in one of which the first foot was always an anapæst; in the other, either an iambus or a spondee; and in his genuine odes, no other variety was, I think, admitted. The last syllable was common. Both of these have been considered by others as *Ionici a majore*, with an anacrusis of one or two syllables. (See Herm. de Metr. p. 348.) This metre occurs with an anapæst in the first place, in Eur. Cycl. 493—511. Soph. Ph. 1176, 7. El. 1067, 8. 1079, 80.

Iambic Dimeter.—The tragedians admitted an iambus or a spondee indifferently in the first and third places of this verse, and a tribrach in the three first, and a pyrrhic in the last (Soph. Ant. 853—5. 872—4. 952, 3. 963, 4. Eur. Or. 978. 982. Œsch. Prom. 159—161. 178—180. Sept. 982, et seq. Pind. Ol. 4. Ep. 3. Nem. 1. 1.): but when many of these verses were united together in a system, as was often done by the writers of comedy, the measure was continued to the end of the system; the last syllable, there-

fore, was not common, but the fourth foot admitted the same varieties as the second; according to this scheme,

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| υ | — | υ | — | / | υ | — | υ | — |
| υ | υ | υ | υ | / | υ | υ | υ | υ |
| υ | — | υ | — | / | υ | — | υ | — |
| — | υ | υ | — | / | — | υ | υ | — |

Aristoph. Eq. 367—379. 443—454. 911—938. Ach. 1040. 1192. 1209. Lylilr. 260—3. (Herm. p. 144. Gaisford. p. 243—5.)

Iambic Dim. Hypercat. Eur. Or. 975. Soph. Ant. 338. 349. Œsch. Prom. 431. Pind. Ol. 6. 1. 7. 5. Bacchylides, fr. 7. and Blaf. fr. 4. Brunck. And with an anapæst in the third place. Pind. Pyth. 8. Ep. 1. The third verse of the *Alcæic ode* was in this metre. Alcæus seems always to have used an iambic in the third seat. See Bentley on Hor. Od. 2. 19. 15.

Iambic Trim. Brachycat. Eur. Or. 976. 1398. 1448. 1451. Soph. Ant. 587. Œd. t. 1339. Pind. Nem. 8. Ep. 6.

Iambic Trim. Cat.—This is ascribed to Archilochus by Hephaestion. Archil. fr. 24. Brunck. Eur. Phœn. 301. Or. 1365. Soph. Œd. t. 865. 889. Theocrit. Epigr. 18. Br. Anal. Phalæus has an epigram in this verse. Anal. 1. 421.

Iambic Trimeter, is the metre of this kind most commonly used; and it consisted of three iambic dipodix.

“ Iambus ipse sex enim locis manet
Et inde nomen inditum est Senario;
Sed ter feritur; hinc Trimeter dicitur,
Scandendo binos quod pedes conjungimus.”

Terentianus Maurus.

It is so nearly allied to prose, that Aristotle (Rhetor. 3. 1. 9. 3. 8. 4. Poet. § 4.) and Demetrius Phalereus (§ 43. see also Cicer. Orat. § 189.) have observed, that many iambic verses were uttered in common conversation; and they are frequently to be met with in the works of Greek prose authors. From this circumstance it was well suited to the *fermo pedestris* of satire, to which purpose it was applied by its inventor Archilochus. (See Hor. Art. Poet. 79. and Od. 1. 16. 2. and 22. Epist. 1. 19. 24.) The same circumstance made it also peculiarly applicable to dramatic composition.

“ Hunc Socci cepere pedem, gravesque Cothurni,
Alternisque aptum sermonibus, et populares
Vincentem strepitus, et natum rebus agendis.”

Hor. Art. Poet. 80.

See also Cicer. Orat. § 191.

A pure iambic verse would consist of six iambic feet; as

Ἐπι σχολῇ πάρεστι, πᾶσι Μουσίου.

Dion. Hal. de Compof. § 17.

but necessity obliged the first writers to admit other feet, which was chiefly done in the first, third, and fifth places.

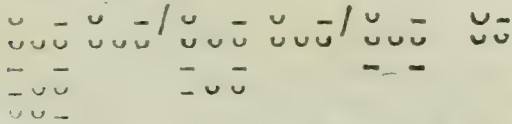
“ Tardior ut paulo graviorque veniret ad aures,
Spondeos stabiles in jura paterna recepit,
Commodus & patiens; non ut de sede secunda
Cederet, aut quarta socialiter.”—

Hor. Art. Poet. 254.

The few fragments of Archilochus and Solon which remain, have a spondee in the first and third places much more frequently than an iambic; and they seem to have used them indifferently in the fifth. Archilochus also affords two instances

IAMBIC VERSE.

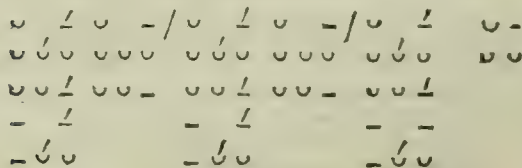
instances of the resolution of the iambus into the tribrach in the second; and one, of the admission of a dactyl into the first place. These licences were afterwards generally used by the tragic poets, who admitted the following varieties into their verse.



Many critics, among whom are Musgrave (on Eur. El. 23) and Brunck (on Soph. Œd. c. 371 and 1169, and Phil. 491.), have thought that the anapaest was admitted in the second and fourth places; and it was long the universal opinion that it was allowed in the third and fifth; and there are several verses in the printed editions which seem to confirm this opinion; but in proportion as more and better manuscripts have been consulted, the number of these places has been diminished, and the anapaest has been confined to the first place, where Æschylus and Sophocles have been careful to include it in a single word, and Euripides either in a single word, or in a preposition and the word which it governs. (Morell. Profod. p. 11. 19. Porson. præf. ad Eur. Hec. Hermann. præf. ad Eur. Hec. p. 33. 38. and 53.) In proper names, such as *Ἐγμίον, Ἀπιγόν*, which could not otherwise be used in an iambic verse, greater licence was allowed; and an anapaest was admitted in any place but the last. And this liberty has been sometimes used in names which did not necessarily require it, as: *Μενέλαος, Ἀγαμέμνων*, but care was taken that the whole anapaest should always be included in the name. Porson. præf. p. 20. Herm. præf. p. 60.

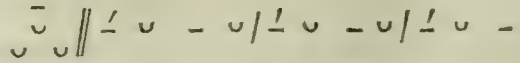
It has been observed by Mr. Porson, to whom we owe the first notice of some of these rules, and the establishment and confirmation of others, that in the tragic writers, when an iambic trimeter ends in a trisyllable, the fifth foot is very rarely a spondee, unless the last word but one be a monosyllable. It is the same, if the verse ends with a trochee and a syllable, or with a long syllable and an iambus, if the long syllable is a preposition, or an article, or any syllable particularly belonging to the following word; but if the long syllable is an enclitic, or a particle referring to what goes before, it may then make part of a spondee. (Porson. præf. p. 30. Herm. on Eur. Hec. 341.) This rule is strictly observed also by Lycophron. Mr. Porson (see note on Eur. Phœn. 1464.) has observed that *καὶ* never makes the latter part of a spondee in the fifth foot of a tragic iambic. Perhaps he overlooked Soph. Phil. 961; and he seems himself to have admitted a conjecture of Canter on Æsch. Suppl. 411, which introduces it.

The comic poets used much greater licence, and the form of their verse was



The reason of these licences will be more clearly seen, if we consider that in the iambic trimeter there are three *ἄσσεις*, or ictus, or emphases, which are here marked, the first of which took place on the long syllable of the first iambus, or its equivalent. As the rhythm was principally directed by

these, it may be considered as beginning at the first arsis; and the verse will then become a trochaic trimeter catalectic; in this form



(See Bentley on the Metres of Terence; Daves Mife. Crit. p. 189; Herm. de Metr.) The syllable before the first arsis, when the rhythm had not yet commenced, was indifferently either short or long, and sometimes two short ones were admitted. In the remaining part of the verse, as two short syllables were considered as equivalent to one long, the tribrach was used almost indiscriminately instead of the trochee, except in the fifth foot, where the tragedians seldom resolve the long syllable, and never, if it is preceded by a long one. The first foot of each trochaic dipodia (either $\cup \cup$ or $\cup \cup$) being most distinctly heard, was preferred pure by the tragic poets, but in the familiar style of comedy, the dactyl was sometimes substituted for the trochee, which would produce an anapaest in the second place of the iambic verse. In the next foot, at the close of each dipodia, a spondee or a trochee was indifferently used by the tragedians, and a dactyl by the writers of comedy.

Daves (p. 250.), and Morell (p. 12.), have observed that Aristophanes avoids putting an anapaest immediately after a dactyl or a tribrach in an iambic trimeter. Hermann (de Metr. 150–162.) produces many instances (to which more might be added) of an anapaest after a tribrach, which he considers as a proceleusmatic, formed from the resolution of the long syllable of an anapaest and an iambus; but they are probably corruptions, and may be removed without difficulty. It may be observed also that when an anapaest is admitted into the fifth place by Aristophanes, it is included within one word; or contains the whole of two, as of a preposition and an article; or is entirely comprehended within the last words of the verse: but the beginning of the anapaest is never joined in the same word with the fourth foot, or any part of it. In Brunck's edition there are only seven exceptions to this rule; two of which (Ach. 800. 962.) are occasioned by the marks of dierefsis improperly placed, and the other five (Plut. 942; Nub. 238. 1192. 1458; Av. 90.) may be very easily corrected.

The cæsure of the iambic verse takes place at the end of the first trochaic dipodia, that is, in the middle of the third foot; and a new trochaic order then begins. The constant observation of this cæsure would make the verse too uniform and monotonous; it is therefore very frequently neglected: for I would not consider as a cæsure, the termination of a word in the middle of the fourth foot; since the first foot of the trochaic order which succeeds would then frequently be a spondee. As *Σὺ δ' ἐλθέ, καὶ σήμερον—Ἀργείους τάδε*. Instead of either of these, a division sometimes takes place after an elision at the end of the third foot; but otherwise the tragedians very rarely make the third or fourth foot a single word; and carefully avoid including them both in one word; as that would destroy all perception of the trochaic order of the verse. Bentley; Herm. de Metr. p. 147; and on Eur. Hec. v. 721; Porson. pr. to Hec. p. 24; Gaisford or Hephæst. p. 239.

The words which cannot begin a sentence, cannot stand at the beginning of an iambic verse (Bentley on Menand. p. 108. Monthly Rev. June, 1785, p. 424.), and the arsis is very seldom admitted on an enclitic (Porson, p. 16.), or on the last syllable of a word of more than two syllables (Daves, p. 211. 320.) though to this a few exceptions may be found. Arist. Lyl. 739. 744. Rar. 785.

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In the *satiric fable* the same licence was probably allowed as in the comedies. In the single drama which remains, a dactyl is not to be found in the fifth place, nor an anapaest in the third; unless Pierfon's conjecture on v. 28. be admitted.

The earliest *iambographi*, or writers of iambic verses, Archilochus, Solon, and Simonides, used a spondee or an iambus indifferently, as has been before observed, in the odd places; but were very sparing in the use of feet of three syllables. The "Poem upon Women," which was written perhaps by some Simonides of more recent date, has a tribrach once, in the first, second, and fifth places, and an anapaest once in the third. Lycophron has admitted a tribrach in the third place (v. 1164. ed. Reichard., and fourth (700. 991.), and with part in a proper name in the second and fourth (520. 874. 1046). He has ten or eleven dactyls in the third place, but an anapaest only in a proper name (720. 930. 952.); for in v. 634. ττ should be expunged. See Herm. de Metr. 150, who asserts that the iambographi never admit a dactyl or anapaest. Brunck. Soph. Œd. c. 371. Porson. præf. to Hec. p. 19.

Another kind of iambic trimeter much allied to this, was the *Choliambicus*, *Claudus*, or *Scæzon*, called also *Hipponacteus*, from Hipponax, who is said to have first used it. He applied it to the same purpose of severe satire, and bitter invective, as Archilochus. (Leonid. Epigr. 97. Alcæus, Ep. 18. Philipp. Ep. 83. Demetr. Phal. § 325. Eustath. on Od. 11. p. 1684. Cic. de Nat. Deor. 3. 38. Hor. Epod. 6. 14. Ovid. Ibis, 523.) The distinguishing characteristic of it was a spondee in the sixth place. The varieties which it admitted, as far as we can collect from the fragments of Hipponax, Babrius, and others which remain, were according to the following scheme.

$$\begin{array}{cccccccccccc} \cup & - & \cup & - & / & \cup & - & \cup & \cup & - & / & \cup & - & - & - \\ \cup & \cup & \cup & \cup & / & \cup & \cup & \cup & \cup & \cup & / & \cup & - & - & \cup \\ - & \cup & - & - & - & - & \cup & - & - & - & - & - & - & - \\ \cup & \cup & - & \cup & \cup & - & \cup & \cup & - & - & - & - & - & - \end{array}$$

Of these the anapaest was very rarely used, and the dactyl not frequently. (Bentley on Phalaris, p. 433—6. Gaisford on Heph. p. 251—8.) These verses were sometimes called *Mimiambi*. (Terentianus Maurus. A. Gell. 15. 25. 20. 10.) Joh. Stobæus has preserved several of them from *Herodes in Hemiambi*, which ought perhaps to be changed to *Mimiambi*. (See Casaub. on Athen. 1. cap. 17.) This metre was sometimes used by Callimachus. See his Fragments, collected by Bentley, 83—98.

When the fifth foot was also a spondee, the verse was called *ισχυρίωνος*. (See Tyrwhitt's Babrius, p. 13.) This was principally used by Ananias (or, as he is called by Athenæus, Ananius), but was occasionally intermixed with the other by Hipponax and Babrius. See also an epigram on Hipponax, by Theocritus.

Iambic Trimeter Hypercat. Aristoph. Lyfistr. 1297. Thesm. 988. It occurs in Æsch. Chæph. 321. 352, according to Burney's arrangement; and in Pind. Ol. 3. 6. and Nem. 9. 11. according to Hermann.

Of Iambic Tetrameter Brachycat. which is mentioned by the scholiast on Hephæstion, I find no example.

Iambic Tetrameter Catal., called also *Hipponacteus*. (Sch. on Aristoph. Plut. 253. Hephæstion. Marius Victorinus. See Gaisford, p. 246.) This was very frequently used by the comic writers, and had a pause at the end of the fourth foot, though the word frequently did not end with it. It admitted, in the first, third, and fifth feet, the same varieties as in the same feet of the comic trimeter; and, in the second

and sixth, the same as in the second and fourth of the other. The fourth foot could only be an iambus or a tribrach; and in the seventh an iambus only was allowed, except in the case of a proper name, when an anapaest was admitted in either place. Aristoph. Ran. 905—970. Nub. 1034—1084. Therm. 531—573. Lyfistr. 539, 540. Porson, præf. to Hec. p. 39. Monthly Rev. Sept. 1789, p. 253, note.

Iambic Tetrameter. A verse of Alcæus in this metre is quoted by Hephæstion, and his Scholiast. Boiscus of Cyzicus is said to have first used it. It was not used by the Greek dramatists. Hermann, p. 181. Gaisford, p. 245.

Iambic Tetrameter Hypercat. The Scholiast on Hephæstion produces a verse in this metre, and says that the measure of iambic verses was extended still further; but the examples which he cites are made up of shorter verses of Archilochus joined together.

The Romans do not appear to have made use of so great a variety of iambic verses as the Greeks. I will enumerate those which were most commonly used by them.

Iambic Monometer Hypercat. occurs occasionally in the tragedies which are ascribed to Seneca. (Œd. 411. 415. 732.) An anapaest and a spondee were used in the first place:

Iambic Dimeter Catal. Seneca, Med. 849—878. Œd. 485. Plaut. Mort. 1. 2. 19.

Iambic Dimeter. Seneca uses a system of these verses in Agam. 759—784. In the first foot he has admitted a spondee and a dactyl; in the third, a spondee; and the last syllable is common. He has an anapaest in the first and fourth, Œd. 414. Plautus (Mort. 1. 2. 25. 26. 49. 50.) and Terence (Andr. 1. 2. 5. 1. 5. 5. 8. 17. 3. 3. 5. 3. 4. 26.) use a spondee and anapaest in every foot but the last, and a dactyl also in the two first. Hermann (de Metr. p. 146.), Virgil (Catal. 5.), Horace (Epod. 1—10), Martial (1. 50. 3. 14), and Seneca (Med. 771—786.), have used this verse alternately with the iambic trimeter. Horace (Epod. 14, 15.) has intermixed it with hexameters, and Martial (1. 62.) with scæzons. Besides the iambic and spondee, an anapaest and dactyl are admitted in the first place by Martial, and a tribrach by Horace, who once uses a dactyl also in that situation. The second was always an iambus or tribrach. The spondee was the most common foot in the third, but an iambus is occasionally used, and Martial and Seneca have sometimes an anapaest.

Iambic Dimeter Hypercat. This is the third verse of the Alcaic ode, which Horace always uses in this form, preserving a spondee in the third place $\cup - \cup - / - - \cup - / \cup$

Iambic Trimeter Brachycat. Seneca Œd. 719, 720. 731. 733, 4. 736. Agam. 596. He admits a spondee and anapaest in the first place, and a spondee in the third, fourth, and fifth.

Iambic Trimeter Cat. Horace uses this metre (Od. 2. 18.) with a cæfura in the middle of the third foot. As it follows a trochaic dimeter catal., and the syllable preceding the cæfura is either long or short, this verse may be considered as an asynartete consisting of an iambic penthemimer, and an ithyphallic. A spondee was allowed in the first place, and a tribrach in the second. In Od. i. 4, the same meter occurs with the same cæfura, and a long syllable always before it. As it is joined with an asynartete, compounded of a dactylic tetrameter, and an ithyphallic, it may properly be considered as an asynartete here also.

Iambic Trimeter. In the tragedies of Seneca, an iambus, tribrach, spondee, dactyl, anapaest, and proceleusmatic were admitted in the first place, and the four first of these in the third, which received an anapaest also, though rarely, and

only in words of four syllables. In the second and fourth, an iambus, or a tribrach only, was admitted. In the fifth place an iambus is found only in five verses, and a dactyl only in four; the verse ending, in both cases, with a word of four syllables; and a tribrach only in three, and contained by one word. (See *AVANTIUS*.) An anapæst and a spondee were admitted indifferently in this place; but it is observable that the anapæst is always contained in one word, with or without an elision of the last syllable, except in eight places where a pyrrhic is found followed by *est*, or *is*. The only exceptions to this rule are in *Herc. Oct.* 406. 757, and *Oct.* 393, which may be all made regular by an easy transposition. The anapæst in *nescio quid*, which occurs five times, is not an exception, as that expression was considered as one word.

Plautus and Terence in the first four feet use an iambus, spondee, dactyl, tribrach, anapæst, and proceleusmatic. In the fifth, a spondee, dactyl, and anapæst. The third and fourth feet were very rarely allowed to be single words, which would have thrown the arsis on the last syllable of the words; and whenever this happened, they were careful to have the preceding syllable short. (See Bentley on Terence.) Phædrus uses the same licence as the comic writers, excepting that he does not admit a proceleusmatic.

Catullus in *Carm.* 4. 20. 29; Virgil in *Catal.* 3, 4; and Horace in *Epod.* 16. (where he uses this metre alternately with hexameters), admit no foot but the iambic, except a pyrrhic at the end, from the last syllable being common. In other places where this verse is used alone, as Catullus, 52, Horace, *Epod.* 17, or with alternate dimeters, a spondee, anapæst, and dactyl were admitted in the first and third places; a spondee and anapæst in the fifth; and a tribrach in the second, third, and fourth.

The scæzon is used not unfrequently by Catullus; by Virgil, *Catal.* 2. 7; and by Martial very frequently. Virgil admits no foot of three syllables, and Catullus very rarely. Martial has the same variety as in the regular trimeter in the four first feet; and in the second and fourth he admits also occasionally an anapæst. In this metre the fifth foot, among the Latins, was almost invariably an iambus, though a spondee may be found there in Martial. 1. 67. 13.

Iambic Trimeter Hypercat. Seneca *Agam.* 612. Plaut. *Aul.* 2. 1. 3. 2. Stich. 1. 1. See Herm. de Metr. 169—175.

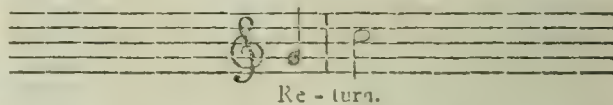
Iambic Tetrameter Catal., called also *Septenarius*. Catullus, 25. Terence, *Andr.* 4. 2. Eun. 3. 4. 3. 5. Hec. 2. 2. 5. 2. Plaut. *Ani.* 3. 3. Mil. Gl. 2. 4. Mort. 1. 3. In all the feet of this verse, but the fourth and seventh, the same variety was allowed as in the trimeter. In the fourth, Bentley (on Hec. 2. 2. 10.) admits in Terence only an iambus; but in Eun. 3. 5. 55. his own edition has an anapæst, and in Hec. 5. 2. 24, a proceleusmatic, in that situation. Plautus has sometimes admitted in the fourth a tribrach and an anapæst, and sometimes seems to have considered the verse as an asynartete, and therefore admits a pyrrhic and an hiatus before the cæsuræ. (*Ani.* 3. 3. 61.) In the seventh, a spondee, dactyl, and anapæst were used. See Herm. de Metr. p. 177—181.

Iambic Tetrameter. This metre was also used very frequently by the comic poets. The cæsuræ was either at the end of the fourth foot, or in the middle of the fifth. In this latter case, all the six feet first admitted the same variety as the comic trimeter. In the former the fourth foot was generally an iambus. The seventh foot might be a spondee or an anapæst. The eighth was always an iambus. (*Ter.* *Andr.* 1. 2. 1. 3. Eun. 3. 5. 5. 8. Phorm. 2. 1. Plautus, *Bacchid.* 4. 9. *Amphitr.* 3. 4.) The verses quoted by

Cicero (*Tusc.* 1. 44.) from an old tragic poet, and which he calls *Septenarii*, were referred to this metre by Scaliger, Gerh. Vossius, and lately by Hermann. Bentley was of opinion that this verse was never used by the Latin tragedians. See Herm. de Metr. p. 181—186.

N.B. The editor is indebted for the two preceding valuable articles to the Rev. Mr. Adams, vicar of Hællstead, Essex.

As a poetical foot consists of a certain number of syllables which constitute a distinct part of a verse, so a bar of an air in music contains a certain number of notes of different lengths which are reducible to long and short syllables: an hexameter verse consists of six of these feet, a pentameter of five; an iambic foot has one short and one long syllable: as $\ominus \cup$, $\lambda \epsilon \gamma \alpha$, *potens*, *amas*.



In ancient music, says Rousseau, there were two kinds of iambic verse, one of which was only recited to the sound of instruments, whereas the other was sung. It is not easy to comprehend what effect the accompaniment of instruments could have on simple recitation; and all that we can reasonably conclude is, that the most simple manner of pronouncing Greek poetry, or at least iambics, was to musical tones, and very much resembled singing.

IAMBICE, in the *Musical Instruments of the Ancients*. Among the stringed instruments of the ancients mentioned by J. Pollux, we find one called iambice; and Musonius, "de luxu Græcorum," says that it was a kind of triangular cithara, invented by Ibycus.

JAMBlichus, in *Biography*, an ancient philosopher, who was a native of Syria, and educated at Babylon. Upon Trajan's conquest of Assyria, he was reduced to a state of slavery; but recovering his liberty, he afterwards flourished under the reign of the emperor Antoninus. His treatise in the Greek language, entitled "Babylonica de Simonidis et Rhodanis Amoribus," and consisting of 16 books, is said to have been lodged in MS. in the library of the Escurial, and destroyed by fire in the year 1671. A fragment of it was preserved by Leo Allatius, accompanied with his own Latin version, in his *Selections from the MSS. of Greek Rhetoricians and Sophists*, Rome, 1641, 8vo.

JAMBlichus was also a native of Chalcis in Cælo-Syria, and flourished about the beginning of the fourth century. He received his first instructions from Anatolius, president of the Peripatetic school at Alexandria; and afterwards became a disciple of Porphyry. He was eminently versed in the mysteries of the Plotinian system, and taught it with such reputation and success, as to attach to his school a great number of disciples. Although he was much inferior to Porphyry in eloquence, he commanded the reverence of his followers by high pretensions to theological powers. In the exercise of these powers, which he professed to acquire by an intercourse with invisible beings, he astonished the credulous, and obtained the name of "the most divine and wonderful teacher." His reading was extensive, but his style was inaccurate and inelegant; and he took great liberty in borrowing from others, and particularly from Porphyry. This charge of plagiarism is alleged against Jamblichus by Kuster, Vossius, Gale, Mosheim, and other learned men; but Dr. Lardner does not perceive any ground for it. This impartial and candid writer is of opinion, that Porphyry and Jamblichus found the same stories in au-
thors

thors more ancient than themselves, whom they both transcribed, and sometimes almost word for word. He adds, that most of the things related by these two authors concerning the wonderful works ascribed to Pythagoras are so trifling, and so manifestly fabulous, that he cannot believe they intended to oppose them to the miracles of Jesus Christ. The miracles of our Saviour, says Lardner, are all great and awful, related by credible witnesses, with all the circumstances of credibility: the trifling and fabulous accounts of Pythagoras cannot be set in competition with them. It is sufficient disparagement to those proud and learned philosophers that they gave credit to the Pythagorean fables. We need not reproach them with an intention to oppose them to the miracles of Jesus Christ. "The Life of Pythagoras;" "An Exhortation to the Study of Philosophy;" "Three Books on Mathematical Learning;" "A Commentary upon Nichomachus;" "Institutes of Arithmetic;" and "A Treatise on the Mysteries of the Egyptians, Chaldæal Assyrians;" are all the writings of Jamblichus now extant. The most esteemed editions of the above-mentioned works are those "De Myst. Ægypt. Chald. et Assy. necnon et alii Tractatus Philosophici," printed by Aldus, at Venice, 1497, fol.; "De Myst. Ægypt. necnon Porphyrii, Epistola, &c. Gr. and Lat. ex Interpretatione et cum Notis Thonæ Gale," Oxon, 1678, fol.; and "De Vita Pythag. Liber. Gr. and Lat. ex emendatione et cum notis Ludolphi Kusteri;" Amster. 1707, 4to. From St. Jerome we learn that Jamblichus wrote copious comments on the precepts of Pythagoras, commonly called "the Golden Verses;" and the emperor Julian, who holds him in equal estimation with Plato, cites a treatise on the sun, from which he has made many extracts. Fabricius mentions another work of Jamblichus, not now extant, entitled "Of Images;" or "Of the Divinity of Images;" of which Photius has given some account. The design of Jamblichus, it is said, in this work, is to shew the divinity of idols, which he calls images, and that they are filled with the divine presence, and are fallen down from Jupiter, &c. In support of this opinion he relates many incredible stories. This work of Jamblichus is confuted by Philoponus. The time and place of his death are uncertain; but there is reason for believing that he died before Constantine, and probably about the year 333.

The school of Jamblichus produced many Eclectic philosophers, who were dispersed through various parts of the Roman empire. The immediate successor of Jamblichus was Ædesius of Cappadocia. Fabr. Bib. Græc. vol. iv. and vol. vi. Brucker's Hist. Philos. by Enfield, vol. ii. Lardner's Works, vol. viii.

JAMBlichus, another Platonic philosopher, who was a native of Apamea, in Syria, flourished during the reign of the emperor Julian, who was much attached to him, and very freely corresponded with him. This philosopher is said to have been poisoned under the reign of the emperor Valens. This Jamblichus has been confounded with the former by many writers, though they lived at very distant periods, and the works of the one have been ascribed to the other. This Jamblichus was the friend of Alypius, wrote with him on the subject of music, and composed the history of that great musician's life.

JAMBlicI SAL, in *Medicine*, a kind of salt prepared with sal ammoniac, and several aromatic ingredients, such as pepper, ginger, thyme, origanum, and the like; it has its name from its reputed author Jamblichus, and is supposed by many old writers to be an excellent medicine for concocting the crude humours, and gently producing stools. It was taken

fasting in the quantity of half a spoonful, either alone or in a poached egg, or mixed with any liquor.

JAMBO, or JANBO, in *Geography*, a sea-port town of Arabia Felix, in the province of Hedsjas, on the coast of the Red sea; 72 miles S.W. of Medina. N. lat. 24° 5'.

JAMBOLIFERA, in *Botany*. See CALYPTRANTHES.

JAMBON, in *Geography*, a river of the island of St. Vincent, which runs into the sea; five miles S. of Young Point.

JAMBON, in *Natural History*, a name given by authors to a kind of sea-shell, resembling a ham of bacon. It is a species of *pinna marina*.

JAMBOS, in *Botany*. See EUGENIA.

JAMBS, among *Carpenters* and *Bricklayers*. See JAUMS.

JAMBU, in *Ornithology*. See COLUMBA *Jambu*.

JAMBU, the name of a Brazilian species of partridge, of which there are two species. They are of a dusky yellow colour, and are equal to the European partridges in the delicacy of their taste. Margrave.

IAMBUS, ἰαμβος, in the *Greek* and *Latin Prosody*, a poetical foot, consisting of a short syllable followed by a long one: as in

ἄεθ, ἀεθ, Δεῖ, μέας.

"Syllaba longa brevi subjecta vocatur iambus," as Horace expresses it; who also calls the iambus a swift, rapid foot, *pes citus*.

The word, according to some, took its rise from Iambus, the son of Pan and Echo, who invented this foot: or, perhaps, who only used sharp biting expressions to Ceres, when afflicted for the death of Proserpine. Some rather derive it from the Greek ἰος, *venenum, poison*; or from ἰαμβίζω, *maledico, I rail, or revile*; because the verses composed of iambuses were at first only used in satire.

The invention of this kind of verse is ascribed by Horace to Archilochus:

"Archilochum propria rabies armavit iambo."

Art. Poet.

See IAMBIC *Foot*.

JAMDRO, or PALTÉ, in *Geography*, a lake of Thibet, of such extent that it is said to be about 300 miles in circumference, or to require to encompass it 18 days journey of 20 miles each. By the Lama's map the circumference is only 150 British miles. According to the description of Giorgi, it has in the middle a range of hills and isles; or, according to the Lama's map, one large island, encircled by a lake from three to eight miles wide. The island is said to be about twelve leagues in diameter, and the trench that every where furrounds it is about two leagues broad. On the south of the island is the convent of the great female lama, Turcapamo, who was adored as a deity, and received with supreme pomp when the visited Lassa, which is about three days journey, or about 24 miles N. of the lake. On the north of the lake stands Cambala, a mountain of great height, and at a distance of seven miles runs the river Sampo, or Burrampoot, which is here 500 feet wide. N. lat. 28° 50'. E. long. 90° 45'.

JAMENGIAN, a town of Persia, in the province of Farfitan; 42 miles W.S.W. of Schiras.

JAMES, ST., in *Scripture Biography*, denominated "The Elder," by way of contradistinction to the subject of the next article, was the son of Zebedee, a fisherman upon the lake of Galilee, and of Salome, who is supposed by Theophylact and others to have been related to our Lord. As he is always mentioned first, except in Luke, ix. 28. he was probably

probably older than his brother John. Of the call of James and John to be stated attendants on our Lord's ministry, we have an account in Matt. iv. 21, 22. Mark, i. 19, 20. Luke, v. 1—10. These two brothers were distinguished by the appellation of "Boanerges," or sons of thunder, not by way of reproach, as Cave has erroneously intimated, but as an honourable anticipation of the resolution and courage with which they would openly declare the truths of the Gospel, as soon as they were made acquainted with them. It appears that after they were enlisted in the number of our Lord's disciples, they were admitted into a peculiar intimacy with their Master, and attended him on some of the most interesting occasions in the course of his ministry. At the resurrection of Jairus's daughter, at our Lord's transfiguration on the mount, and in the scene of his last agony, James was present; and he was one of the four apostles to whom Christ delivered his prediction concerning the previous calamities and ultimate destruction of Jerusalem. James appears to have been eminently diligent and zealous in fulfilling the commission which in common with the other apostles he had received, or of announcing the character and pretensions of their Master through various parts of Judea, which were afterwards the scenes of his personal ministry. On some occasions, however, both he and his brother John, indulging a resentment, and also an ambition which were inconsistent with the nature of Christ's kingdom and the mild spirit of his religion, subjected themselves to the just reprehension of their Master. When they wished to command fire from heaven to destroy the Samaritans for refusing them the accommodation which they solicited, he reproaches them with not knowing what manner of spirit actuated them; and when, apprehending his kingdom to be temporal, they bespoke stations of dignity and influence when it was established, he corrected their mistaken views, checked their inordinate ambition, and forewarned them of the trials and sufferings that awaited them. After the resurrection of Christ, James retired into Galilee, but soon returning to Jerusalem, he was witness of his ascension, and participated of the extraordinary gifts communicated to the apostles on the day of Pentecost. His subsequent activity in preaching the Gospel to the Jews drew upon him the particular notice of the enemies of the Christian cause; and in the year 44. Herod Agrippa, himself a Jew, and desirous of engaging the attachment of the Jewish people, caused James to be apprehended and to be beheaded with a sword; thus rendering him the first among the apostles who became a martyr for Christ and his religion. It has been said by Gaspar Sanctius, and also by others, that this James planted the Gospel in Spain; but this account is inconsistent with the history in the Acts, none of the apostles having left Judea so soon; nor is the opinion founded on the testimony of any ancient writer of good credit; and it is now given up, though once defended by Baronius, both by him and other popish writers. See the Four Gospels and the Acts. Lardner's Works, vol. vi.; or Supplement to the Credibility, ch. ix.

JAMES, ST. denominated "The Less," partly by way of distinction from the former, and probably also on account of his stature, an apostle of Christ, was the son of Alphaeus, or Cleophas, and frequently called the Lord's brother. Some suppose the reason of this appellation to have been, that he was the son of Joseph by a former wife; but according to others he was thus called, because his father married Mary, sister to our Lord's mother, so that they were in reality cousins; and, therefore, in conformity to the latitude with which the Jews applied the terms brother

or sister, they were denominated brethren. That he was an apostle is evident from a great variety of passages in the New Testament, though it does not appear when his designation to this office took place. He was honoured by our Lord with a separate interview soon after his resurrection (1 Cor. xv. 7.); he was distinguished as one of the apostles of the circumcision (Acts, i. 13.); and soon after the death of Stephen, about the year 36, he seems to have been appointed president or superintendent of the Christian church at Jerusalem, to have resided in that city, to have presided in the council held there in the year 49 or 50, and to have maintained a character which commanded the respect of all who knew him, and entitled him to the appellation of "The Just." But notwithstanding the high opinion that was generally entertained of his character, his life was terminated by a premature and violent death. Hegesippus, cited by Eusebius, has detailed the circumstances attending it. Having made a public declaration of his faith in Christ, the Scribes and Pharisees excited a tumult among the Jews, which began at the temple; or at least they availed themselves of a general disturbance, however it might have originated, and demanded of James an explicit and public declaration of his sentiments concerning the character of Christ. The apostle, standing on an eminence in the temple, whence he could be heard by the assembled multitude, avowed his faith and maintained his opinion, that Jesus was the Christ or expected Messiah, and that his doctrine furnished sufficient instruction how men might be saved. The Jews were exasperated, and the Scribes and Pharisees, repenting of their conduct in extorting from the apostle such a testimony to Jesus, caused him to be precipitated from the battlement of the temple upon which he stood, and then to be stoned, because he was not killed with the fall. St. James, kneeling down, prayed earnestly to God on behalf of those who were thus maltreating him; but they persisted in their violent and savage treatment of him, till at length one of them struck him with a long pole, which put an end to his life. According to Hegesippus, this event happened about the time of the Passover, which was probably that of the year 62. At this time Festus is supposed to have been dead, and Albinus his successor was not arrived: so that the province was without a governor. Such a season left the Jews at liberty to gratify their licentious and turbulent dispositions; and they were very likely to embrace it; and we may therefore very reasonably place this event at that juncture. Of Josephus's account we have not availed ourselves, because several learned men have suspected it to be an interpolation. Bishop Pearson, however, who seems to admit the genuineness of the whole passage of Josephus, placed the death of James in the year 62; and it is now the general opinion among learned men that James died about that time. For an account of the epistle addressed to the twelve tribes scattered abroad, comprehending all Jews both in Judea and out of it, and justly ascribed to the apostle James, we refer to the article EPISTLE. As for other works that have been attributed to him, such as the Πρωτο-εὐαγγέλιον (Proto-euangelion), inserted in Greek and Latin in Fabricius's Cod. Apocryph. New. Test., and a "Liturgy," bearing his name, they are evidently not of his writing. The former is manifestly supposititious, and the latter bears internal marks that it belongs to a later period than the apostolical age. Lardner's Works, vol. vi. or Supplement to Credib. ch. xvi. Cave's Hist. Lit. vol. i.

JAMES, a deacon. Bede informs us that, when Paulinus was bishop of the Northumbrians, his deacon, named James, acquired great fame for his skill in the church song.

This

This must have been about the year 620, soon after the conversion of the Saxons by Austin: when Paulinus was translated to Rochester, deacon James was left at York, to instruct the ecclesiastics in the Roman method of chanting.

JAMES I. king of Scotland, of the house of Stuart, son of Robert III. by Anabella Drummond, was born in the year 1394. In 1405 his father determined to send the young prince to France, in order that he might escape the dangers to which he was exposed from his uncle the duke of Albany, but in endeavouring to avoid one peril he fell into another; being taken by an English cruiser, he and his whole suite were carried prisoners to the Tower of London. Here the young prince received an excellent education, to which Henry IV. of England was remarkably attentive, thereby making some atonement for his injustice in detaining him. Robert died in the following year, and James was proclaimed king, but during the remainder of the reign of Henry IV. and the whole of that of Henry V., he was kept in confinement, with a view no doubt of preventing the strength of Scotland from being united to that of France against the English arms. At length, under the regency of the duke of Bedford, James was restored to his kingdom, having been full eighteen years a prisoner in this country. James was now thirty years of age, well furnished with learning, and a proficient in the elegant accomplishments of life, and dextrous in the manly exercises, which at that period were in high estimation. He married Joanna Beaufort, a lady of distinguished beauty, descended from the royal family of England, and on his return to Scotland he had much trouble to reduce the public affairs to order. During the regency of the duke of Albany and his son, many of the most valuable possessions of the crown had been alienated, and the licentiousness of the great, sanctioned by the authority and example of the chiefs, seemed to set at defiance all restraints of law and justice. James instantly caused the whole of the family of Albany and their adherents to be arrested. The latter were chiefly discharged; but the late regent, his two sons, and his father-in-law, he caused to be convicted, executed, and their estates to be confiscated to the crown. Whether these proceedings were founded in justice cannot now be ascertained, but it is certain the king himself presided as judge, and as the verdicts in Scotland are decided by a majority of votes, it would scarcely be difficult for a judge and a king to obtain his wishes whether founded in equity or not. James is also charged with entrapping a number of Highland chiefs by hospitality, entertaining them in his castle, and in the midst of their hilarity causing the gates to be shut upon them; a fact which proves that he was not over scrupulous in the means of maintaining his authority. His political ability was displayed in a less exceptionable manner by the enactment of many good laws in his parliaments, which much improved the state of society in the kingdom where they could be executed. His desire of improving the revenues of the crown led him to many acts of tyranny, which rendered him odious to his nobility. In 1436 he gave his daughter Margaret in marriage to the dauphin of France, and sent with her a splendid train and a vast body of troops. The English, who had in vain attempted to prevent this union by negotiation, now endeavoured to intercept the Scotch fleet in its passage, but they missed their object, and the princess arrived in safety at Rochelle. James, exasperated at this act of hostility, declared war against England, and summoned the whole array of his kingdom to assist in the siege of Roxburgh; which, however, he abandoned upon an intimation of a conspiracy being formed against himself by his own people. He now retired to the Carthusian monastery of Perth, which he had himself founded, where he lived in privacy, which, instead of

preventing, facilitated the success of the plot formed against his life. The chief actors in this tragedy were Robert Graham, and Walter, earl of Athol, the king's uncle. The former was actuated by revenge for the sufferings of some of his family, the latter by the hope of obtaining the crown for himself. The assassins obtained by bribery admission into the king's apartments; the alarm was raised, and the ladies attempted to secure the chamber-door; one of them, Catharine Douglas, thrust her arm through a staple, making therewith a sort of bar, in which state she remained till it was dreadfully broken by the force of the assailants. The instant they got admission they dragged the king from his concealment, and put him to death with a thousand wounds. He left one son and five daughters. James was a poet as well as a sovereign, and his works, descriptive of the manners and pastimes of the age, became extremely popular, and are still read with delight by those who can relish the northern dialect. His private character was amiable, and he possessed qualities that would have obtained for him high respect in any condition; his improvements in the laws and police of his country, and his attempts to abolish anarchy, entitle him to respect, though in some instances his eagerness for reform led him to tyranny.

James, an accomplished but unfortunate prince, is said by all the British historians to have been a skilful musician; and it is asserted, that he not only performed admirably on the lute and harp, but was the inventor of many of the most ancient and favourite Scottish melodies. Where this prince acquired his knowledge in music is not ascertained; but it is probable that it was in France, in his passage home from which country he was taken prisoner by the English. Before the Reformation we hear of no music being cultivated in Scotland but plain-song, or chanting in the church; nor afterwards, for a long time, except psalmody.

The genuine and ancient Scots melodies are so truly national, that they resemble no music of any other part of Europe. They seem to have been wholly preserved by tradition till the beginning of the last century, when a collection of Scots songs was published by a Mr. Thomson of Edinburgh, for which there was a very large subscription; and in February, 1722, a benefit concert was advertised for the editor, to be terminated at the desire of several persons of quality, with a Scottish song. To this publication and concert may be ascribed the subsequent favour of their national, singular, and often touching melodies, south of the Tweed.

Tassoni, indeed, (lib. x. cap. 23.) tells us, that "James I. king of Scotland, had not only composed sacred music, but invented a new species of plaintive melody different from all others; in which he has been imitated by the prince of Venosa; who," he adds, "in our times has embellished music with many admirable inventions." This assertion greatly increased our desire to examine works in which so many excellencies were concentrated; particularly as we had long been extremely desirous of tracing the peculiarities of the national melodies of Scotland, from a higher source than David Rizzio. But in a very attentive perusal of all the several parts of the whole six books of the prince of Venosa's madrigals, we were utterly unable to discover the least similitude or imitation of Caledonian airs in any one of them; which, so far from Scots melodies, seem to contain no melodies at all; nor, when scored, can we discover the least regularity of design, phraseology, rhythm, or, indeed, anything remarkable in these madrigals, except unprincipled modulation, and the perpetual embarrassments and inexperience of an amateur, in the arrangement and filling up of the parts.

Buchanan, among other historians, has drawn the character

rafter of James I. of Scotland at full length; and among many other particulars, mentions his being excellently skilled in music; more indeed, he adds, than was necessary or fitting for a king: for there was no musical instrument on which he could not play so well, as to be able to contend with the greatest masters of the art in those days. Buch. *Ret. Scotie*. Hist. lib. x. sect. 57.

And in the continuation of Fordun's Chronicle (*Scotichronicon*, vol. iv. p. 1323.), is a character of James I. which ranks him equally high as a musician. And in Hector Boethius is an eulogium upon him, which we shall give in the dialect of the country, from the translation of that historian by Bellenden. "He was well lernet to fight with the sword, to just, to turnay, to worsyl, to sing and dance, was an expert musician, richt crafty in playing baith of lute and harp, and indry other instruments of musik." This polished and ingenious prince may have added some melodies to the tunes of his country, imitating the national style; but, in general, the old and genuine Scots tunes seem still more ancient than even the time of James I., who being a good musician, had he been the original inventor of melodies, would have made them accord more to the rules of composition built on the scale of Guido, which was well known all over Europe at the time when this monarch was in existence. And, indeed, however singular and pleasing these airs may be, they are drawn from so imperfect a scale, and so frequently begin in one key and end in another, that we cannot help thinking they were produced before the scale of Guido was formed. (See *OSSIAN*.) It seems as if national tunes might be called *traditional*, and the general music of Europe *cultivated*.

JAMES II. son of the preceding, was in his seventh year when his father was murdered: this was in the year 1437. The custody of the youthful monarch, and the administration of government, devolved upon sir Alexander Livingstone, and the chancellor Crichton, while Archibald, earl of Douglas, and duke of Touraine, was declared lieutenant-general of the kingdom. Discord, the natural attendant upon such a government, arose among these great men, and the affairs of the nation fell into disorder. Crichton and Livingstone were perpetually at variance, till the desire of freeing themselves from earl Douglas produced a reconciliation between them. They invited him, his brother, and his chief confidant to Edinburgh, and while sitting at a sumptuous dinner, they were all three seized at the royal table, and were immediately murdered. Lord Douglas's son, within three years of this catastrophe, procured the proscription of Livingstone and Crichton, his own family he restored to all their former dignities, and the principal offices of the state were given to his friends and relations. In 1449 James was married to Mary, daughter of the duke of Guelderland, and almost as soon as he could be said to act for himself, he began to be jealous of the vast power and influence of the Douglas family. The earl, aware of his own danger, negotiated an asylum at the court of England, and at the same time entered into a bond with the earls Crawford and Rofs, and other noblemen, mutually to support each other against their common adversaries. The knowledge of these facts was soon communicated to the king, who summoned the earl to his court. The haughty lord refused to comply till he should be assured of protection under the great seal. The form was readily complied with, but it was no safeguard against the meditated treachery. James received him with apparent cordiality, and invited him to supper. After the repast, he demanded of his guest the bond entered into with the earls of Crawford and Rofs; this he nobly refused, and the king with his own hand stabbed him. From this period James was perpetually harassed by attempts made against his peace

by the earl's family, and in 1456 a rebellion was excited by Donald, lord of the isles, in connection with an invasion from the English. He defeated his enemies, and in his turn, in 1460, resumed hostilities, and laid siege to Roxburgh castle. Here he was killed by the accidental burling of a piece of artillery. He was then in the prime of life, being not quite thirty years of age. He had already surmounted the difficulties which arise from youth and from violence of temper, to which he was subject, but which he had subdued, and there was every prospect of a wife and prosperous reign. He left three sons and two daughters.

JAMES III. king of Scotland, succeeded to the crown when he was only eight years old, on the death of his father in 1460. The care of his person was given to his mother, while the chief management of the government devolved on lord Evandale, the chancellor, and James Kennedy, bishop of St. Andrews. The death of the good prelate, in 1466, proved a public misfortune, by delivering the young king into the power of flattering and mercenary courtiers. In 1468 a marriage was contracted between James and Margaret, daughter to Christiern I. king of Sweden, Denmark, and Norway. For the marriage portion, the Orkney and Shetland isles were pledged, and they ever after remained under the dominion of Scotland. This marriage took place in July, 1469, and James took upon himself the reins of government. His character, as it opened, displayed weakness, indolence, and caprice: he had an attachment to literature and the fine arts, as they were then understood; his mind was, however, unfortunately biassed towards despotism, but accompanied with lenity. He was esteemed pious and devout, but did not scruple indulging his avarice by alienating ecclesiastical benefices to laymen. In 1477 an unhappy quarrel took place between the king and his two brothers, the duke of Albany and the earl of Mar: the former made his escape from the Edinburgh castle in which he was confined, but the earl of Mar was accused of employing magical practices against the king's life: of this crime he was convicted and made a close prisoner, in which situation he shortly died, but whether by a fever or by more violent means is not known. The king gave great offence to his nobility, by selecting as his favourite and chief confidant, Cochrane, a mason and architect, whom from that state he elevated to the vacant earldom of Mar. During an invasion of the English, which James endeavoured to repel, Cochrane was seized and hanged, and the king himself made prisoner by his own nobles. The English proceeded as far as Edinburgh, when an accommodation took place; the king was liberated and resumed the reins of government. Some succeeding years were marked with little else than misgovernment on the part of the king, and progressive discontents among the nobles; till in 1488, a confederation of the great broke out into open rebellion, the objects of which were to dethrone and imprison James, and place his son on the throne. After various attempts at pacification, in which the king shewed an evident unwillingness to shed the blood of his people, he resolved to commit his fortune to the decision of a battle, from which he was obliged to seek safety by flight; in crossing a rivulet his horse started and threw him; though stunned he was not dangerously hurt, and was carried by his attendants to a neighbouring mill, where some of his enemies, recognizing his countenance, cruelly murdered him. He left three sons.

JAMES IV. was in his sixteenth year when he was forced into a contest with his father, and whose murder elevated him to the crown in 1488. Though urged by the ambition of his nobles to the unnatural step of open rebellion, he did not easily forgive himself the steps which he had taken. One of his first feelings after he had ascended the throne, was remorse

JAMES.

remorse for his unfilial and disloyal conduct, and it is said, that as there was no superior earthly tribunal to which he was amenable, he condemned himself to wear an iron chain round his body as a punishment which he had justly incurred, and that he added a new link to its weight for every succeeding year of his life. The victorious barons, less scrupulous with regard to the bloody deed in which they had been engaged, were anxious only for security for the future; and obtained a declaration in parliament of their innocence with respect to the late king's death, and other slaughters, which were imputed to his own perverseness and deceit; and a subsequent parliament in 1490 was instrumental in healing the feuds and animosities of parties, and restoring internal tranquillity. The king contributed much to this desirable end by the impartial administration of justice. The qualities of his mind and heart were well calculated to obtain for him the respect and attachment of his people in every situation and rank of life. For many years he maintained a strict peace with Henry VII. of England, till at length he offended that monarch by adopting the cause of Perkin Warbec, who came strongly recommended to him by the court of France. War was excited on this account for a short time, but the love of peace, which was ever uppermost in the mind of Henry VII. soon put an end to all national differences. Though James, on this reconciliation, abandoned the cause of Perkin, he had too high a sense of honour to give him up. In 1503 he married Margaret, the daughter of Henry, an event which, in the issue, produced the union of the two kingdoms under one crown, though at the distance of two centuries from this marriage. In subsequent parliaments James caused several very useful laws to be enacted which led to the improvement of the country, nor was he less anxious to render Scotland respectable with regard to foreign potentates. In the reign of Henry VIII. he was engaged in warfare with England: after several predatory incursions from both parties, James entered England at the head of a hundred thousand soldiers, and made himself master of many castles and other strong holds. At one of these he formed an attachment to a lady of exquisite charms, the power of which he could not resist. He forgot the importance of time to the career of his army, and remained several days in a state of inactivity, during which, from a concurrence of unfortunate circumstances, his vast army was reduced by desertion to less than thirty thousand. These, dispirited by the conduct of their king, were brought to contend with an almost equal number at Flodden Field, in Northumberland, under the earl of Surrey. The battle was fought on the 9th of September, 1513: prodigies of valour were displayed on both sides; the king rallied his troops again and again, as if ashamed of the amours which had brought him into such a state of peril; he was determined to shew himself the man and the hero; wherever there was most danger, there was James, till he fell mortally wounded; this circumstance, and the darkness of the night, put an end to the conflict. With the monarch were slain his natural son, the archbishop of St. Andrew's, twelve earls, and a multitude of the highest rank among the nobility and gentry of the kingdom. Scotland, says the historian, can reckon few more fatal days than that of Flodden Field. The body of the dead king fell into the hands of the conquerors, who carried it to the monastery of Sheene, near Richmond, where it was interred. James IV. was slain in the forty-first year of his age, and the twenty-sixth of his reign. He was succeeded by

JAMES V. his son, an infant not two years old. His minority passed in that contention of parties which commonly attended such a period in Scotland. When, however, he arrived at an age to be allowed to manage the

affairs of government, his character displayed itself in decided features. In his youth he had witnessed the disorders which a powerful and lawless aristocracy had inflicted upon his people, and he was now the constant and determined foe of the nobility. While he depressed the powerful, he raised and favoured the low, so as to obtain and merit from his people the appellation of "King of the Poor." No object was nearer to James's heart than the suppression of those bands of freebooters whom the licence of the times had suffered to range uncontrolled in the remote parts of the country. He even exposed his person in expeditions against these marauders, whom he treated with unrelenting rigour. After reducing the borders and highlands to order, James paid a visit to the isles of his dominions, and held courts of justice in the Orkneys and Hebrides, to the terror of the tyrannical chieftains of those regions. In 1537 he married the sister of the king of France, who lived but a few months. In the same year he incurred the stain of cruelty in causing the son of lord Forbes to be beheaded for treason upon very slight and unsatisfactory evidence, and still farther by the burning of the beautiful and heroic lady Glamis, sister of the earl of Angus, for the imaginary crime of witchcraft practised on his own person. James had contracted a partiality for the French court, and married for a second wife Mary, daughter of the duke of Guise, an union which probably enforced his propensity to severe measures against the Protestants, who began to appear in great numbers in Scotland, and of whom several nobly suffered death in defence of their opinions. Henry VIII. was desirous of joining James with himself in opposing the pretensions of the Roman see, and sent an embassy into Scotland to persuade him to enrich himself with the spoils of the monasteries. In some respects James was willing to listen to the proposals of the English monarch, but French influence was too powerful, and he afterwards sent an excuse to Henry for the breach of his engagement, which provoked that prince so much, that it was imagined a war between the two kingdoms would ensue. Hostilities were actually commenced, and James was urged, as well by the king of France as by his own clergy, to pursue some advantages, which he at first gained, into the enemy's country; but his army were evidently ill affected to their monarch, remonstrated against the design, and in the event of an attack some time after, suffered themselves to be taken prisoners, or deserted from their colours without a struggle. James, already depressed by the loss of his two infant princes, was now overwhelmed with anguish, shame, and despair. He retired to Falkland, and shewed every symptom of declining health. So lost was he to any thing that might interest his feelings, as a man or sovereign, that when news was brought him of the birth of a daughter, he took no other notice of the event than to say, "The crown came with a girl, and will go with a girl." He expired December 14, 1542. The reader is referred for farther information relating to the foregoing kings of Scotland, to Pinkerton's history of that country, and to Henry's History of Great Britain.

JAMES I. of England, and the VIth of that name of Scotland, was son of Mary, queen of Scotland, by her cousin Henry, lord Darnley. He was born at Edinburgh castle in June, 1566, at the exact time when his mother was at open variance with her husband, and had fixed her affections on the earl of Bothwell. The young prince was committed to the charge of the earl of Mar, who with much fidelity did his duty, and kept him out of the hands of Bothwell. In the following year Mary was forced to resign the crown, which was placed on the head of her infant son. He was solemnly crowned at Stirling, and thenceforth all public acts ran in his name. He was educated by the celebrated

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Buchanan while he was at Stirling castle; his progress in school-learning was rapid, and he manifested talents which presaged the future great man: but he became the prey of flatterers, who instilled into his youthful mind the most pernicious maxims of the plenitude of regal authority, and urged him to unpopular measures, which in 1582 produced a conspiracy of the nobles against him, who took possession of his person at Ruthven castle. From thence he was conveyed to the palace of Holyrood-house, and treated with much external respect, while in reality he was held in the utmost restraint. A new confederacy of other nobles produced his liberation, and he put himself under the sway of his favourite the earl of Arran, who was violent and unprincipled, and who carried on measures of severity against the nobles of the former conspiracy, and against the clergy who favoured them. He contrived to engage the mind of the young king with a constant round of amusement, and he himself exercised with unlimited sway all the regal authority, and by his insolence and rapacity rendered himself universally odious. Queen Elizabeth of England had long employed her arts to maintain a party in the country, which policy was become more necessary on account of her conduct to its queen. Though James had hitherto been induced to treat his mother very irreverently, yet when her life appeared to be in imminent danger, from the sentence pronounced against her by an English court of judicature, he felt himself bound to interfere, and wrote a menacing letter to Elizabeth on the occasion. He also applied to other courts for their assistance, and assembled his own nobles, who promised to stand by him in preventing or avenging such an injustice. When he learned the fatal catastrophe, he rejected with a proper spirit of indignation the hypocritical excuses of Elizabeth, and set about preparations for hostilities, but cooler reflection on his own resources, which were inadequate to the purposes of carrying on a serious war, and reflecting also on the necessity he was under of keeping on terms with England to secure his succession to the crown, of which he was the presumptive heir, he resolved to resume a friendly correspondence with the English court. It is to the honour of James that one of the first acts of his full majority, in 1587, was an attempt to put an end to all family feuds among the nobility, and personally to reconcile them with each other at a solemn festival in Holyrood-house. When the invasion of England was resolved upon by Philip, king of Spain, he put his kingdom into a state of defence, resolving to support the queen against her enemies. His people also were zealous for the preservation of Protestantism, and entered into a national bond for the maintenance of true religion, which was the origin and pattern of all future engagements of the kind, under the name of solemn leagues and covenants. After the glorious defeat of the Armada, Philip, in revenge of the conduct of James, stirred up a conspiracy of some Popish lords in his kingdom, which was discovered by Elizabeth, and when it broke out into open rebellion, was instantly crushed by the king at the head of a body of troops. The conspirators were treated with lenity, which James ever shewed towards the Catholics, and which brought the sincerity of his own professed faith into question, though it probably proceeded partly from mildness of temper, and partly from timidity. Though he was probably satisfied of the errors of popery, he was fond of the splendour of ecclesiastical hierarchy, and bore a rooted antipathy to the republican model of Presbyterianism.

In the year 1589 he married Anne, daughter of Frederic, king of Denmark, and as contrary winds prevented her coming to Scotland, he went to fetch her, and having consummated the marriage, he passed the winter in a series of

feasting and amusements at Copenhagen. On his return he was frequently in danger from conspiracies against his life, particularly from those excited by the earl of Bothwell. In the year 1600, while the country was in a state of unusual tranquillity, a very extraordinary event took place, the nature and causes of which were never discovered. While the king was upon a hunting excursion, he was accosted by the brother of Ruthven, earl of Gowrie, who, by a feigned tale, induced him and a small train to ride to the earl's house at Perth. Here he was led to a remote chamber on pretence of having a secret communicated to him, where he found a man in complete armour, and a dagger was put to his breast by Ruthven, with threats of immediate death. His attendants were alarmed and came to his relief; in the end Gowrie and his brother were slain, and the king escaped unhurt. As Elizabeth advanced in age, the English nation began to look with more confidence to James as their future king, and many persons of consequence held a secret correspondence with him on the subject. In 1603, on the death of the queen, James was proclaimed her successor. He took an affectionate leave of his countrymen, and proceeded, amidst the acclamations of his new subjects, to London. One of his first acts was to bestow a profusion of honours and titles upon the great men, as well of his own country as those of England. Within a very short period, and at a time of apparent general tranquillity, a conspiracy was discovered for subverting the government and raising to the throne Arabella Stuart, a near relation of the king's, by the family of Lenox, and descended equally from Henry VII. "Every thing," says Hume, "remains still mysterious in this conspiracy, and history can give us no clue to unravel it." The principal actors in it were lord Grey, a Puritan; lord Cobham, a thoughtless man, of no fixed principle; and sir Walter Raleigh, a philosopher, and supposed to be a freethinker. What cement could unite men of such discordant principles in so dangerous a combination; what end they proposed, or what means they had proportioned to an undertaking of this nature, have never yet been explained, and cannot easily be imagined. A conference held at Hampton-court in 1604, between the divines of the established church and the Puritans, afforded James a good opportunity of exhibiting his skill in theological controversy, and the ill will he bore to popular schemes of church-government. Although the king had distinguished himself in his own country by lenity to the Roman Catholics, yet those of that religion in England were so much disappointed in their expectations of his favour, that a most atrocious plot was formed by the zealots of that party to blow up the house of lords at the first meeting of parliament, and with it the king, queen, and prince of Wales, and all the principal nobility and gentry of the kingdom, and then to set upon the throne the young princess Elizabeth, and establish the Catholic religion. This plot was fortunately discovered on the eve of the designed execution, and the principal persons in it suffered the punishment due to their crimes. In 1611 he remonstrated with the Dutch states, on account of their permitting Arminius Vorlius to hold a professorship in one of their universities. He was deemed by James a heretic, and he carried his point in getting him removed. His next object was to reduce Ireland to a settled form of law and government. In 1612 a putrid fever carried off his son Henry, a prince who was, on account of his many promising virtues, the hope and darling of the nation: and in the following year the princess Elizabeth was married to Frederic, elector palatine.

We do not pretend in these biographical sketches to enter into the minutæ of each reign, nor to record all the transactions that relate to the prince himself, but we must not omit

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omit to mention the odium which James brought on himself by patronising his favourite Robert Carr, who, in prosecution of his lascivious designs, was guilty of the most atrocious acts. No circumstance, however, in James's reign was more unpopular than his treatment of the celebrated Sir Walter Raleigh; after the detection of the conspiracy already referred to, he was tried and capitally convicted, but being reprieved, he was kept thirteen years in prison. In 1615 he obtained by bribery his release from prison, but the king would not grant him a pardon. He went out on an expedition with the sentence of death hanging over his head; he was unsuccessful in his object, and on his return the brutal king ordered him to be executed on his former sentence. (See RALEIGH.) James is supposed to have been more influenced to this deed by the court of Spain than by any regard to justice. The influence of that court on James appeared soon after in his negotiations for marrying his son prince Charles to the infant. The object was, however, not attained, and he afterwards married him to the French princess Henrietta, with the disgraceful stipulation, that the children of that marriage should be educated by their mother, a bigotted papist, till they were thirteen years of age. As he advanced in years he was disquieted by a concurrence of untoward circumstances. The dissensions of his parliament were very violent, and the affairs of his son-in-law, the elector palatine, now king of Hungary, also were in a very disastrous state. He had undertaken the cause of the Protestants of Germany, but instead of being the arbiter in the cause of others, he was stripped of his own dominion. In his defence, James declared war against the king of Spain and the emperor, and sent troops over to Holland to act in conjunction with prince Maurice for the recovery of the palatinate; but from mismanagement, the greater part of them perished by sickness, and the whole enterprise was defeated. Oppressed with grief for the failure of his plans, the king was seized with an intermitting fever, of which he died in March 1625. He left two children, Charles, his successor, and Elizabeth, the wife of Frederic. It would be difficult, says Hume, to find a reign less illustrious, yet more unspotted and unblemished, than that of James in both kingdoms. James possessed many virtues, but scarcely any of them pure or free from the contagion of neighbouring vices. His learning degenerated into pedantry and prejudice, his generosity into profusion, his good nature into pliability and unmanly fondness, his love of peace into pusillanimity, and his wisdom into cunning. His intentions were just, but more adapted to the conduct of private life than to the government of kingdoms. He was an encourager of learning, and was himself an author of no mean genius, considering the times in which he lived. His chief works were "Basilicon Doron;" and "The true Law of free Monarchies;" but he is more known for his adherence to witchcraft and demoniacal possessions in his "Demonology," and for his "Counterblat to Tobacco." Hume's Hist. Robertson's Hist. of Scotland.

The accession of James to the crown occasioned no immediate benefit to science or refinement in the polite arts; as the country he quitted was still less polished than that in which he arrived. Nor does it appear that this prince, either from nature or education, was enabled to receive any pleasure from music; however, early in his reign, the gentlemen of his chapel, assisted by the influence and solicitation of several powerful noblemen, who pleaded their cause, severally obtained an increase of ten pounds to their annual stipend.

An entry is made of this event in the cheque-book of the Chapel Royal, signed, not only by five of the great officers

of state, but by the subdean, chaplains, and gentlemen of the chapel then living.

Among these petitioners there is but one name, that of Edmund Hooper, which ever appears afterwards in the lists of musicians eminent for composition or performance, except Bird, Bull, and Gyles, who had distinguished themselves in the preceding reign.

Anthems, masques, madrigals, songs, and catches, seem to comprise the whole of our vocal music for the church, the stage, and the chamber, at this time. And with respect to instrumental productions under the title of "Fancies, &c." as they were chiefly composed for lutes and viols, which are now laid aside, if they had been replete with genius and learning, justice could not have been done to them in the performance. Luckily the chief part of them are of so artless and insipid a kind, that no loss would accrue to judicious and reasonable lovers of music by their utter annihilation.

Elway Bevin and Orlando Gibbons were the best, and almost the only good composers during the reign of James I. if we except those which the reign of queen Elizabeth had produced, and who embellished during a few years her successor's reign. See BEVIN, and ORLANDO GIBBONS.

JAMES II. king of England, and the VIIth of Scotland, second son of Charles I. by Henrietta of France, was born in October 1633, and immediately declared duke of York. (See CHARLES I. and II.) After the capture of Oxford by the parliament army in 1646, he was carried to London, and placed under the care of the duke of Northumberland, but in 1648 he contrived to make his escape, and in the following year joined his mother at Paris. At the age of twenty he served in the French army under the celebrated Turenne, and acquired a great reputation. He afterwards entered into the Spanish army in Flanders, under the prince of Condé, and thus he advantageously passed his exile in acquiring military experience, and the reputation of spirit and prowess suited to his birth. At the restoration of his brother, James took the command of the fleet as high-admiral; and he was married to Anne Hyde, daughter of lord Clarendon. (See HYDE.) Maritime and commercial affairs engaged the duke's attention, and he was at the head of an African company, when, in 1664, he took a part in promoting a Dutch war for the supposed interests of trade. He had been made commander-in-chief of a powerful fleet, and obtained a signal victory over the Dutch under admiral Opdam. Opdam's own ship was blown up in the action, and nineteen of his fleet were sunk or taken, with the loss of a single vessel on the part of the English. The duke was in the thickest of the fight, and three of his friends, men of high rank, were killed by his side. The conduct of Broucker, his gentleman of the bed-chamber, brought suspicion on the duke. Without the knowledge of his master, and while he was asleep, this man gave orders to slacken sail, though in pursuit of the enemy; but as he was not punished for his orders, nor even dismissed from his office till the matter was agitated in the house, the duke himself was accused by his enemies of being privy to the orders issued by his servant. After this he had no farther share in the naval actions of that war. In 1671 the duchess of York died, leaving two daughters, Mary and Anne, who came to be successively queens of England. Before her decease she openly declared herself a convert to the Roman Catholic religion, which had been secretly that of the duke many years, and was now openly avowed by him. In the Dutch war of 1672, the duke of York was again placed at the head of the fleet, a furious engagement ensued, in which the

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earl of Landwick, who was second in command, was blown up, and the duke's own ship was so much shattered, that he was obliged to shift his flag to another. At length the Dutch retired, and were not pursued, the loss being nearly equal on both sides. By an act of parliament, papists were now excluded from all public employments, and the duke was obliged to resign his command. (See *TEST ACT*.) After this he used every endeavour to introduce the Catholic religion into England. In 1677 the duke's eldest daughter, Mary, was married to the prince of Orange, an alliance which gave universal satisfaction to the nation. Both Mary and Anne had been brought up in Protestant principles, to which they stedfastly adhered. During the proceedings occasioned by the supposed Popish plot, the duke of York, in 1679, by his brother's advice, withdrew to Brussels. A bill was afterwards brought in and carried through the house of commons to exclude the duke from the succession to the throne; it was, however, rejected by the lords. In 1681 he was sent to Scotland to hold a parliament as king's commissioner; but his conduct on this occasion exposed him to the imputation of cold unrelenting tyranny, and the manner in which he treated the remnant of the covenanters was cruel in the extreme. Having returned to London, he set out for Scotland a second time, but the frigate in which he embarked struck upon a sand-bank off the coast and was lost. The duke escaped in a barge, and is said to have shewn more anxiety to save his dogs and his priests, than several persons of quality who were with him, and who were left to perish. Among those who were preserved on this occasion was Churchill, afterwards the illustrious duke of Marlborough, at that period one of the duke's favourites. During the remainder of Charles's reign, the duke had much influence in government, and was forward in promoting all the severe measures which were acted at that period. More than once the king felt himself called on to check his impetuous rigour, warning him of the probable consequences of such rashness. "Brother," said he on a particular occasion, "I am too old to go again on my travels; you may if you choose it." At this time the king was meditating some important changes in public measures; he had formed the plan of a new administration, resolved to dismiss those servants who were hated by the people, and to throw himself entirely on the good will and affections of his subjects; but amidst these truly wise and virtuous designs, he was seized with a fit, which carried him off in a few days, leaving his brother in possession of the crown and kingdom. From the moment of his succession to the throne, James seems to have pursued with steady determination two objects, *viz.* of rendering himself absolute, and of introducing the Roman Catholic religion into his dominions. He began his career in government by going openly, with the ensigns of his dignity, to mafs, though at that time it was an illegal meeting. He also shewed an intention of carrying the prerogatives of the crown as high as possible, and beyond the true constitutional limits. A rebellion, excited in favour of the duke of Monmouth, the late king's natural son, shewed the temper of James in its true light. The stability of his throne would have been strengthened by the suppression of this rebellion, had not the severity of his measures produced a hatred which was greater than the terror which it inspired. Monmouth paid his life as the penalty of his futile attempt. Of his followers many were put to death on the field, when they had no means of resistance in their power, and not a few suffered in cold blood by martial law with circumstances of savage brutality. As if not satisfied with the ferocity of his soldiery, James called to his assistance, in the bloody work, the more ferocious and superlatively cruel Jefferies, whose

name has been unanimously consigned to perpetual infamy. This judge was sent down with a special commission, in the exercise of which he displayed the most brutal and unrelenting rigour, and filled the towns of the western parts of our island with mourning and consternation. James declared his approbation of Jefferies' proceedings, by raising him on his return to the peerage and the chancellorship. (See *JEFFERIES*.) These measures struck the nation with terror, and the king was allowed to follow his own course without opposition from the people or parliament. All idea of resistance to arbitrary power might have been lost, had not James pursued with impolitic haste his designs of introducing popery, which excited all the religious zeal of the general body of Protestants, and brought their united force into action. He hoped to lull their apprehensions by a declaration in favour of liberty of conscience, but they soon saw that this was intended ultimately for the benefit of the Catholics only. He attacked the established church, and appointed a commission, which cited before it all clergymen who had done any thing to displease the court. The rights of the universities were invaded, and in particular, a mandate was issued to Magdalen college, Oxford, commanding the election of a man as president, who had shewn a disposition to become a Catholic. The king next published a declaration of indulgence in matters of religion, which was ordered to be read by the clergy in all the churches in the kingdom. Seven bishops met and drew up a humble and very loyal petition against this ordinance. For this act they were committed to the Tower, prosecuted for sedition, and brought to a solemn trial, but no efforts of the court could procure a verdict against them; they were acquitted, and the jury who pronounced them "Not Guilty," were hailed as the saviours of the country. The general rejoicing on this occasion extended to the regiments encamped at Hounslow, and indeed to almost the whole of the army. James had already sent an embassy to Rome, in order to reconcile his kingdom to the holy see, and the birth of a son and heir at this time supported his confidence, but so unpopular was he become, that a general persuasion prevailed that a supposititious child was obtruded on the nation. The dangers which now threatened the liberties and religion of the country produced an union of parties, and many of the nobility and gentry concurred in an application to the prince of Orange, stadtholder of the United Provinces, and the king's son-in-law for assistance. William listened to the prayer of their petitions, and prepared with great secrecy a fleet and an army for the invasion of the country. James was now sensible of his errors, and would gladly have retraced his steps, but it was too late. All confidence between him and the people was at an end, and his concessions were regarded as tokens of fear, not as evidences of contrition. The prince arrived in safety at Torbay, and landed on the 4th of November, 1688. The royal army began to desert by whole companies and even regiments; and the king, deserted by his subjects, and having for his opponent his own son-in-law, found it advisable to retire. His best friends, as he thought them, abandoned his cause; and his daughter Anne, married to prince George of Denmark, put herself into the hands of the insurgents. When news of this fact was brought to him, he exclaimed in an agony of grief, "God help me! my own children have forsaken me." He now sought for safety in a foreign country, leaving the public affairs in the greatest confusion. He repaired to St. Germain, where he was received with the greatest kindness and hospitality by the French king Louis XIV. (See *WILLIAM*.) In the following year, James was enabled by the monarch of France to make a trial for the recovery of Ireland, where the Catholics possessed the

the chief power. He soon became master of the whole island, excepting part of the north. He failed in the siege of Londonderry, and returning to Dublin held a parliament. He soon renewed the most violent measures against the Protestants, which shewed that his disposition, and the principles on which he meant to govern, had undergone no radical change. At length William, who had been appointed his successor, landed with an army in Ireland, and the decisive battle of Boyne was fought in June 1690. In this action, so important to his interest, James kept aloof, and when the fortune of the day went against him, he returned to France. All his other attempts at restoration to the crown of these realms were futile, and he spent the latter years of his life in the practice of devotion. He died at St. Germain in September 1701. His son James, commonly known under the title of "The Pretender," died at Rome in 1766; his son Charles Edward, who invaded Scotland in 1745, died in 1788, and Henry Benedict, cardinal of York, who for some years was supported by this country, is now dead, and he was the last surviving branch of this unfortunate race. Hume. Rapin.

James was too gloomy and bigotted a prince, during the latter part of his life, to have spirit or leisure for cultivating or encouraging the liberal arts; nor, indeed, does he seem to have revolved any other idea in his mind, than the romantic or impracticable plan of converting his three kingdoms to the Catholic faith. And his subjects seem to have been in such a ferment during his short reign, that nothing, which deserves to be recorded, was achieved by any of them, except the wresting from him that power he abused. This remark is not made without recollecting that Newton published his *Principia*, and Locke finished his "Essay on Human Understanding," while this prince sat on the throne; but it can never be imagined that during so short and turbulent a reign, two works which exalt human nature more perhaps than any which the longest reigns upon record ever produced, could have been brought to maturity. Indeed, Purcell, who had so much distinguished himself in the former reign, does not appear by the date or occasion of his exertions, to have produced any particular anthem, ode, or drama, for the church, court, or stage, from the death of Charles II. his first royal master, till after the Revolution, except the anthem "Blessed are they that fear the Lord," which he composed by order of the court in 1687, as a thanksgiving for the queen's pregnancy.

JAMES I. king of Arragon, born about the year 1207, was son of Peter II. who was slain in 1213. On the death of his father James was solemnly proclaimed, but his country was for some years the prey of disturbances usually incident to a people governed by a regency. This youth shewed early signs of a great and heroic mind: at the age of twelve, he put himself at the head of a body of troops, in order to reduce a subject who had raised the standard of rebellion, and the young king returned successful from the expedition. In 1221 he was married to the infanta Leonora of Castile, but in a short time his uncle, Don Ferdinand, contrived to get the king and his wife into his possession. James made his escape, and a series of intestine disorders took place till he became master of his kingdom, when he was about twenty years of age. He now performed many exploits which proved his valour and wisdom, but his great object was to annex to his dominions the kingdom of Valencia, which was subject to the Moors, whom he had already driven from the island of Majorca. For this purpose he solicited a bull of crusade from the pope Gregory IX., which was granted, but as a condition he was obliged to permit severe canons against heresy and reading the scriptures to be enforced in

his dominions, and the Inquisition to be introduced into Arragon. He made himself master of Valencia, and expelled the Moors, who retired into the neighbouring kingdoms of Granada and Murcia, and into Africa. Though generally successful in his projects of ambition, he passed a troubled and agitated life. In 1268, as an atonement for his repeated failings, he took the cross and embarked for the Holy Land, but being driven by storm into a port of France, he returned without accomplishing his purpose. In 1276, the oppressed Moors broke out in open rebellion, and defeated an army sent out against them. This disaster, which he had not contemplated, had such an effect upon the mind of the king, that he fell sick, resigned his crown in favour of his son Pedro, and took the habit of a Cistercian monk. He died in the same year at the age of sixty-nine. To his second son James he left the kingdom of Majorca, and every thing which he possessed in France. Mod. Univ. Hist.

JAMES II. king of Arragon, surnamed the *Just*, son of Peter III., was born in 1261. He was king of Sicily in right of his mother, at the death of his elder brother Alphonso III. in 1291, whom he succeeded to the throne of Arragon. He was persuaded to renounce his rights on Sicily, but his mother and brother Ferdinand were resolved to hold the island by force. James set about reducing Alicant and Murcia, in which he succeeded, and afterwards visited Rome, where he was urged by the pope to make war upon his brother Ferdinand in order to expel him from Sicily. After a feeble attempt for this purpose he gave up the cause from an impression of its injustice. When the persecution broke out against the knights' templars, James, unlike the other sovereigns of Europe, refused to concur in severe measures against them, saying, "We must first be convinced of their guilt, and it will be then time enough to think of their punishment." He even protected and maintained those who had been driven from other countries. In conjunction with the king of Castile, he made an expedition in 1308 against the Moorish king of Granada, merely on account of their religious differences. This enterprize was unsuccessful, and both kings retreated to their own dominions. After this and another expedition against the pirates of Tunis, he turned his attention to improvements in his own country, and the aggrandizement of his family by matrimonial alliances. He compelled his eldest son to marry Eleonora of Castile. The prince, however, immediately quitted his wife, and desired at the same time to renounce all right and title to the succession of his father's kingdom, a favour which was granted him, and in the assembly of the states he took an oath of fealty to his next brother. At the same assembly, Arragon, Catalonia and Valencia were united, and the union declared inseparable. James died in the year 1326, greatly regretted by his subjects, to whom he was endeared by the equity and moderation of his measures. Mod. Univ. Hist.

JAMES DE VITRY, a celebrated French cardinal and historical writer, was born at a small town near Paris, whence he took his surname, towards the close of the 12th century. He was educated for the church, took orders, and obtained some preferment. This he resigned, and became a regular canon in the monastery of Oignies, in the diocese of Namur. Hence he went to Touloufain, where he preached a crusade against the Albigenes. After this, his zeal led him to preach up a crusade against the Saracens, to assume the cross, and to follow the crusaders into the East. Here he continued many years; and was made bishop of Ptolemais, or Acre. In 1228 pope Gregory IX., to recompense him for his services, invited him to Rome, and raised him to the purple, at the same time giving him the bishopric of Fiescati. He was now sent to France, in the capacity of papal legate, to preach up a new crusade

crusade against the Albigenses, and he was afterwards sent in the same capacity into Brabant and the Holy Land. He died at Rome in the year 1244. Although he was author of many works, the most curious, and that by which he is chiefly known, is entitled "Historie Orientalis et Occidentalis, Libri 3." In the first book we have an account of the affairs of the East, civil and ecclesiastical, and the history of the country from the time of Mahomet to the year 1210. In the second a view of the state of ecclesiastical affairs in the West, during his own time; and in the third the history of the East to the year 1218. The cardinal was esteemed a man of talents adapted to the various concerns in which he engaged, and he was steadily devoted to the interests of the holy see.

JAMES, THOMAS, a learned English divine and critic, who flourished in the seventeenth century, was born at Newport, in the Isle of Wight, about the year 1571. He was initiated in grammar learning at Winchester school, and was thence sent to New college, Oxford, of which house he became a fellow in 1593. In 1599, having collected many MSS. he published "Philobibliion Richardi Dunelmensis," with an appendix, "De Manuscriptis Oxoniensibus." This he dedicated to sir Thomas Bodley, who afterwards appointed him to the office of keeper of the library which he was then building. In 1600, Mr. James published "Eclogæ Oxonio-Cantabrigienses," containing a catalogue of all the MSS. in each college library at Oxford, but not those in the public library, and in each college library, as well as the public one, at Cambridge. In 1605, he printed "Catalogus Librorum in Bibliotheca Bodleiana," and shortly after he applied himself to examine the state of all the public libraries in England. In the year 1614 he obtained considerable promotions in the church without solicitation. In 1620 he resigned his office as keeper of the Bodleian library, in order that he might have less interruption in his studies, the chief object of which was the defence of the Protestant church against the Papists. He died at the early age of 51, leaving behind him the character of being the most industrious and indefatigable writer against the Papists of any who had been educated at Oxford since the Reformation. He was author of many other works besides those already mentioned; the titles of which may be found in Wood's Athen. Oxon. See also Biog. Brit. Supplement.

JAMES, RICHARD, nephew of the preceding, was also a native of Newport, in the Isle of Wight, brought up to the church, and entered into holy orders. About the year 1619 he travelled for improvement through Wales and Scotland, whence he proceeded to Shetland, Greenland, and Russia; on the last named country he wrote observations, as well as on the manners and customs of the inhabitants. On his return he assisted the celebrated Selden in the composition of his work entitled "Marmora Arundeliana," which was published in 1628. He was also serviceable to sir Robert Cotton, and his son sir Thomas, in disposing and settling their noble library, and with the former of these he was committed close prisoner by order of the house of lords in 1629. During his confinement he composed some verses, which he prefixed to a copy of all his printed works, and presented it to the Bodleian library, a short time before his death. He died in December 1638, leaving behind him forty-five MSS. of his own composing or collecting, all in his own hand-writing, which were afterwards placed in the Bodleian library. He was regarded by all who knew him to be a very good Grecian, poet, critic, antiquary, and divine; and admirably well skilled in the Saxon and Gothic languages. He was engaged by his uncle to assist in collating the MSS. of the fathers, with the Popish editions, in order to detect the

forgeries and omissions in these last. He seems never to have obtained any preferment in the church, though his uncle pleaded hard for him with the celebrated Usher. In a letter to this archbishop, having mentioned our author's engagement in writing the life of Becket, he recommends him to the prelate in these words: "This kinsman of mine, as well as myself, should be right glad to do any service to your lordship in this kind. He is of strength, and well both able and learned to effectuate somewhat in this kind, critically seen both in Hebrew, Greek, and Latin, knowing well the languages, both French, Spanish, and Italian; immense beyond all other men in reading of the MSS.; of an extraordinary stile in penning; such a one as I dare balance with any priell or Jesuit in the world of his age, and such a one as I could wish your lordship had about you, but "paupertas inimica bonis est moribus," and both fatherless and motherless, and almost, but for myself, I may say, (the more is his pity) friendless." Biog. Brit.

JAMES of the Sword, St., *San Jago del Espada*, a military order in Spain, the most honourable and opulent of the three Spanish orders, instituted in 1170, under the reign of Ferdinand II. king of Leon and Galicia. The other two orders, viz. those of Calatrava and Alcantara, though inferior to that of St. Jago in power and wealth, were nevertheless very considerable.

Its end was, to put a stop to the incursions of the Moors; these knights obliging themselves by a vow to secure the roads, and to defend the pilgrims on their journey to visit the relics of St. James of Compostella.

An union was proposed and agreed to in 1170 between these and the canons of St. Eloy; and the order was confirmed by the pope in 1176. At that time a considerable part of Spain was subject to the Moors, and the whole country much exposed to the depredations not only of the enemy, but of banditti. It is no wonder then, that an institution, the object of which was to oppose the enemies of the Christian faith, and to restrain and punish those who disturbed the public peace, should be extremely popular, and meet with general encouragement.

The highest dignity in this order is that of grand-master, which has been united to the crown of Spain. The knights are obliged to make proof of their descent from families that have been noble for four generations on both sides; they must also make it appear, that their said ancestors have neither been Jews, Saracens, nor heretics; nor even to have been called in question by the inquisition.

The novices were obliged to serve six months in the galleys, and to live a month in a monastery. Heretofore they were truly religious, and took a vow of celibacy; but Alexander III. gave them a permission to marry. They now make no vows but of poverty, obedience, and conjugal fidelity; to which, since the year 1652, they have added that of defending the immaculate conception of the Holy Virgin. The badge of the order is a cross of gold, enamelled crimson, charged on the centre with an escallop shell argent, and worn round the neck pendant to a broad green ribband. Their habit is a white cloak, with a red cross on the breast. This is esteemed the most considerable of all the military orders in Spain: the king carefully preserves the office of grand-master in his own family; on account of the rich revenues and offices whereof it gives him the disposal. The number of knights is much greater now than formerly, all the grantees choosing rather to be received into this than into the order of the Golden Fleece; inasmuch as this puts them in a fair way of attaining to commands, and gives them many considerable privileges in all the provinces of Spain, but especially in Catalonia. The knights are most implicitly

implicitly to obey the commands of their grand master. The order could formerly bring into the field 1000 men at arms; and if they were accompanied as was usual in a former age, this was a formidable body of cavalry. To this order there belonged 84 commanderies and 200 priories, and other benefices.

There was an order of the same name and kind instituted in Portugal by king Don Denys, surnamed the Liberal, who, in the year 1288, obtained a bull from pope Nicholas IV. for the separation of the order from Spain; and in the year 1486, pope Alexander VI., at the solicitation of John II., revoked the vows of celibacy, and allowed all the knights of this order in Portugal to marry. The reigning king of Portugal is grand master of the order. The badge and ribband are nearly the same with those of the Spanish order.

Another order under the same denomination, being a religious order for ladies, was instituted at Salamanca, in Spain, in the year 1312. Their habit was black, their badge, which they wore on the left breast, was a cross fleury fitché embroidered gules, charged on the centre with an escallop or.

JAMES, St., Order of, was instituted in Holland in the year 1290, by Florence V. count of Holland. The knights were 12 in number. The collar of the order was a chain of gold, in which, at equal distances, were placed six escallop shells; and pendant to this collar was a medal of gold with the image of St. James enamelled upon it.

JAMES'S Day, St., a festival in the calendar, observed on the 25th of July, in honour of St. James.

JAMES'S Bay, in Geography, the eastern part of the fourth division of Hudson's bay, with which it communicates, dividing New Britain from South Wales. It is about 150 miles wide. N. lat. $51^{\circ} 10'$ to $55^{\circ} 10'$. W. long. $58^{\circ} 30'$ to $82^{\circ} 45'$. See HUDSON'S Bay.

JAMES'S Cape, St., the southernmost extremity of Queen Charlotte's island, discovered by captain Dixon in 1787, on the 25th of July, whence its name. Captain Vancouver fixes its situation in N. lat. $51^{\circ} 58'$. E. long. $229^{\circ} 6'$.—Also, a cape on the coast of Chiampa, in the Chinese sea. N. lat. $10^{\circ} 32'$. E. long. $106^{\circ} 43'$.

JAMES City, a county of Virginia, in the United States, 30 miles long and 12 broad, lying between Chickahominy and James's rivers, containing 1542 free inhabitants, and 2318 slaves.

JAMES Fort, a fort of the island of Barbadoes, near Bridge-town.—Also, a fortress of Africa, in the kingdom of Acra, on the Gold coast.—Also, a fort on the N. side of Loblollo bay, in the island of Antigua, at the head of which is St. John's harbour.

JAMES Island, an island of America, situated in South Carolina, on the south side of Charlestown harbour, opposite to Charlestown, and containing about 50 families; separated from John's island on the westward by Stono river.—Also, an island of Africa, 30 miles up the river Gambia, where the English have a fort and factory.—Also, a small island near the coast of Maryland, in the Chesapeake. N. lat. $38^{\circ} 40'$. W. long. $76^{\circ} 25'$.

JAMES River, a navigable river of America, in Virginia, anciently called by the Indians "Powhatan," formed by the junction of Jackson's and Cowpasture rivers, which are nearly equal. At the place where it begins to break through the Blue ridge it receives the North river, and in its course between the Blue ridge and Richmond receives several other streams. At Richmond the navigation is interrupted by falls; but a canal serves for the passing of boats by these falls. Above these the river is navigable for batteaux and

canoes to within 10 miles of the Blue ridge. It is not improbable that its navigation may at some future period be made to interlock with that of the Potowmac, and thus to communicate by a short passage with the Ohio. James river, after a course of between 200 and 300 miles, falls into the mouth of the Chesapeake. N. lat. $37^{\circ} 2'$. W. long. $76^{\circ} 20'$.

JAMES, a creek in Delaware; which empties into Delaware bay, 11 miles below Hook island. Dover, the seat of government, stands on this creek, 5 miles from its mouth.

JAMES, St. a town of South Carolina; 15 miles N. of Charlestown.—Also, a town of South Carolina, on the S. side of the Santée; 44 miles N. of Charlestown. N. lat. $33^{\circ} 29'$. W. $79^{\circ} 28'$.—Also, a town of the state of Maryland, in Kent county, 4 miles S.W. of Chester.—Also, a town of France, in the department of the Channel, and chief place of a canton in the district of Avranches; 9 miles S. of it. The place contains 2522, and the canton 12,459 inhabitants, on a territory of 155 kilometres, in 12 communes.

JAMES'S Islands, St., the greater and less, two of the smaller Virgin isles, situated in the King's channel E. of Tortola, and W. of St. Thomas; between which and there is St. James's passage.

JAMES'S River, St., a river of Canada, which runs into the river St. Lawrence, N. lat. $48^{\circ} 10'$. W. long. $69^{\circ} 10'$.

JAMES'S Powder, in the *Materia Medica*, a famous preparation of antimony, the receipt for which, as extracted from the records of chancery, is as follows: "Take antimony, calcine it with a continual protracted heat in a flat unglazed earthen vessel, adding to it from time to time a sufficient quantity of any animal oil and salt, well dephlogisticated; then boil it in melted nitre for a considerable time, and separate the powder from the nitre by dissolving it in water: Take quicksilver, make an amalgam with equal parts of the martial regulus of antimony and pure silver, adding a proportional quantity of sal ammoniac. Distil off the mercury by a retort into a glass receiver, then with the quicksilver make a fresh amalgam with the same ingredients; distil again, and repeat this operation nine or ten times; then dissolve this mercury in spirits of nitre, and put it into a glass retort and distil to dryness; calcine the caput mortuum till it becomes of a gold colour; burn spirits of wine upon it, and keep it for use. The dose of the powder is uncertain; in general, 30 grains of the antimonial powder and one grain of the mercurial is a moderate dose. Signed and sworn to by Robt. James." It is suggested, however, that James's real process was formed upon one previously brought from Italy, which had its run in the fashion of the day, and was called "Lisle's powder," and the preparation of which was very analogous to the present "Pulvis antimonialis;" for an account of which, see ANTIMONY.

In the 2d part of the 81st volume of the Philosophical Transactions (for 1791) we have an elaborate paper, containing a great number and variety of "Experiments and Observations to investigate the Composition of James's Powder." These experiments and observations are the more important and useful, as they serve to explain the nature and manner of preparing this medicine, to which many physicians have recurred, and upon which they have principally depended for the cure of continued fevers; and more especially as this patent medicine cannot be prepared by following the directions of the specification in the court of Chancery. Our limits will not allow us to give a minute detail of the author's experiments; but we must content ourselves with extracting some of the general results, and refer the reader for further satisfaction to the valuable paper itself. From the above experiments it appeared probable

that such a substance as James's powder might be made by calcining together antimony and bone-ashes; which operation produces a powder called "Lisle's" and "Schwanberg's" fever powder; a preparation described by Schroder and other chemists above 150 years ago. The receipts for this preparation, says Dr. Pearson, differed in the proportion of the antimony to the bone-ashes, and in the state of the bone; some directing bone-shavings to be previously boiled in water; others ordered them to be burnt to ashes before calcining them with antimony; and in other prescriptions the bone-shavings were directed to be burnt with the antimony. According to the receipt in the possession of Mr. Bromfield, by which this powder was prepared above 60 years ago, and before any medicine was known by the name of James's powder, two pounds of hartshorn-shavings must be boiled to dissolve all the mucilage, and then being dried, be calcined with one pound of crude antimony, till the smell of sulphur ceases, and a light grey powder is produced. The same prescription was given to Mr. Wallis, about the same time, by Dr. John Eaton, of the College of Physicians, with the material addition, however, of ordering the calcined mixture to be exposed to a great heat in a close vessel to render it *white*. Mr. Turner made this powder, about 50 years ago, by calcining together equal weights of burnt hartshorn and antimony in an open vessel, till all the sulphur was driven off, and the mixture was of a light grey colour. He likewise was acquainted with the fact, that by a sufficient degree of fire in a close vessel this cineritious powder turned white. Mr. Turner also prepared this powder with a pound and a half of hartshorn shavings and a pound of antimony, as well as with smaller proportions of bone. Schroder prescribes equal weights of antimony and calcined hartshorn; and Poterius and Michaelis, as quoted by Frederic Hoffman, merely order the calcination of these two substances together (assigning no proportion) in a reverberatory fire for several days. In the London Pharmacopœia of 1788, this powder is called "Pulvis antimonalis," and it is directed to be prepared by calcining together equal weights of hartshorn shavings and antimony.

From the whole of his *analytical* experiments Dr. Pearson infers:

1. That JAMES's powder consists of phosphoric acid, lime, and antimonial calx, with a minute quantity of calx of iron, which is considered to be an accidental substance.
2. That either these three essential ingredients are united with each other, forming a triple compound, or, phosphorated lime is combined with the antimonial calx, composing a double compound in the proportion of about 57 parts of calx, and 43 parts of phosphorated lime.
3. That this antimonial calx is different from any other known calx of antimony in several of its chemical qualities. About three-fourths of it are soluble in marine acid, and afford Algaroth powder; and the remainder is not soluble in this menstruum, and is apparently vitrified.

From the author's *synthetic* experiments it appears, that by calcining together bone-ashes, that is, phosphorated lime, and antimony in a certain proportion, and afterwards exposing the mixture to a white heat, a compound was formed consisting of antimonial calx and phosphorated lime, in the same proportion, and possessing the same kind of chemical properties, as James's powder.

A powder, says Dr. Pearson, sold by F. Newbery under the title of "JAMES's powder for horses, horned cattle, hounds, &c." is a light clay-coloured, gritty, tasteless substance, in which are seen small *spicula*. He says, it appears to me to be nothing more than JAMES's powder for fevers, or LISLE's powder above-mentioned, made by calcining anti-

mony and bone-ashes together in open vessels; because, if, by exposure to a white heat in close vessels, it turns as white as JAMES's powder; 2dly, it dissolves partially in nitrous acid; and the remainder dissolves partially in marine acid. The nitrous solution contains phosphoric acid and calcareous earth; and the muriatic solution affords Algaroth powder.

JAMESPOUR, in *Geography*, a town of Hindoostan, in Balogistan; 25 miles S.W. of Dadari.

JAMESTOWN, a village of the county of Leitrim, province of Connaught, Ireland, which before the union returned two members to the house of commons. It is on the river Shannon, one mile from Drumsna, which is its post-town; three from Carrick on Shannon; and 73 N.W. from Dublin.—Also, a town of America, in Rhode island. See CANNONICAT.—Also, a post town, formerly the metropolis of Virginia, and now the capital of James city county. It is the oldest town settled by the English in America. It is situated on a peninsula, on the N. side of James river, at its mouth in Chesapeak bay, eight miles S.S.W. of Williamsburgh. N. lat. $37^{\circ} 9'$. W. long. $76^{\circ} 50'$.—Also, a town of Prince Edward county, in Virginia, situated on Appomatox river, 12 miles N.E. from the court-house.—Also, a town of the island of Barbadoes, founded in the latter end of the year 1624, being the first English settlement in the island; situated in St. James's parish, on the W. side of the island.

JAMEZ, or YAM, a town of Africa, in the kingdom of Fonia. N. lat. $12^{\circ} 30'$. W. long. $15^{\circ} 11'$.

JAMGONG, a town of Hindoostan, in Dowlatabad; 10 miles W. of Amednagar.—Also, a town in the circar of Aurungabad; 15 miles E.N.E. of Aurungabad.—Also, a town of Bengal; 58 miles N.W. of Burdwan.

JAMJA, a town of Sweden, in the province of Blekingen; nine miles E. of Carlscrona.

JAMLA, a town of Hindoostan, in the circar of Banfwalch; 18 miles E. of Tandla.

JAMMING, in general, denotes the act of enclosing any object between two bodies, so as to render it immovable.

In *Sea Language*, this expression is applied to the situation of some running rope, when it happens to be squeezed by the compression of the standing-rigging, &c. and consequently incapable of performing its office, by traversing in the blocks, till it is released. In this sense jamming is opposed to rendering.

JAMNEY, in *Geography*, a town of Bohemia, in the circle of Chrudim; 17 miles N.E. of Leutmischl.

JAMNIA, JAMNES, or JAFNA, in *Ancient Geography*, a maritime town of Palestine, between Azotus and Joppa, which belonged to the Philistines; but taken from them by Uziah, king of Judah, 2 Chron. xxvi. 6. According to Josephus, it was given to the tribe of Dan. It was taken by Judas Maccabæus, who burnt its port and its vessels. In the 2d book of Maccabees, xii. 9. it is stated to be distant from Jerusalem 240 furlongs. Steph. Byz. assigns it to the Phœnicians. Augustus gave it to Herod, and this prince transferred it to his sister Salomé, who at her death bequeathed it to Livia, the wife of Augustus. Under the reign of Nero, it was taken by Vespasian, A.D. 67. After the conquest of Judea by Vespasian and Titus, an inconsiderable body of the Jews remained, when others withdrew; and collecting the scattered fragments of Jewish learning from the general wreck into a school at Jafna or Jamnia, revived in this place their forms of worship. The rabbi Jochanan was the founder of the school; and the good design which he began was completed, as far as the state of the times would allow, by the rabbi Gamaliel, called from this circumstance Gamaliel Jafniensis. The success which attended this school

school induced many of the dispersed Jews to return to Palestine; and another school was formed at Tiberias.

JAMNITZ, or GEMNICE, in *Geography*, a town of Moravia, in the circle of Znaym; 22 miles N.W. of Znaym. N. lat. $48^{\circ} 59'$. E. long. $15^{\circ} 28'$.

JAMOORGONG, a town of Hindoostan, in the circar of Aurungabad; 20 miles E. of Jaffierabad.

JAMPNUM, in our *Old Writers*, furze, or gorse, and gorsy ground. This word is used in fines of lands, &c. and seems to come from the French *jaune*, i. e. *yellow*; because the blossoms of furze or gorse are of that colour. 1 Croke 179.

JAMPOLI, in *Ancient Geography*, a town of Greece, in Livadia.

JAMPOUR, in *Geography*, a town of Hindoostan, in Guzerat; 17 miles N. of Radunpour.

JAMPTPOUR, a town of Hindoostan, in Bahar; 25 miles N. of Hajypour.

JAMSA, a town of Sweden, in Tavastland; 56 miles N.N.E. of Tavasthus.

JAMSIO, a town of Sweden, in the province of Blekingen; 32 miles W. of Carlserona.

JAMTLAND, a province of Sweden, bordering upon Norway, about 70 miles in length and 60 in breadth, annexed to the crown of Sweden by the treaty of Roschild, in the year 1658. It is generally mountainous; on the western part the rocks are craggy and the mountains high, having between them deep vallies and rapid torrents. The milk of the cows, bred in these pastures, and housed even in summer, furnishes excellent butter, but they are supplied with beef and tallow from Norway. The eastern part of the province is a champaign country, watered by lakes and rivers which abound with fish; and the neighbouring provinces are occasionally supplied with grain, chiefly barley, oats, and rye, and some wheat from the fertile spots in this district. The Jamtlanders in severe seasons are reduced, by the scarcity of corn, to the necessity of preparing bread from the pulverized bark of trees. The iron ore of this province furnishes employment for many persons; and they have also alum quarries, slate, lead-ore, and other minerals, two copper-works of modern erection, and a place for making saltpetre. The population is inconsiderable, so that in most parts religious service is performed irregularly, and at distant intervals. The towns are few, and in the 11 parishes which Jamtland contains, 46 churches have been erected: the number of chimneys in all these parishes amounts to about 717: The inhabitants derive their subsistence from agriculture, grazing, hunting, and fishing. With the Norwegians they carry on a considerable trade, supplying them with salt-pans, steel, and iron-ware; and a kind of leather, impenetrable by water, of which are made shoes, boots, and even jackets. This country, by the contributions of the peasants, maintains a regiment of foot, or, as others say, of dragoons, and a troop of horse.

JANA, a town of Japan, in the island of Nippon; 25 miles N. of Seodar.

JANA, among the *Romans*, a name given to Diana, or the moon.

JANAGAVA, in *Geography*, a town of Japan, in the island of Ximo; 20 miles S.E. of Ikua.

JANAGUR, a town of Hindoostan, in Guzerat, on the right bank of the Puddar; 100 miles W. of Amedabad. N. lat. $23^{\circ} 30'$. E. long. $70^{\circ} 56'$.

JANAKA, a raja, according to Hindoo legends, who being childless, adopted a female infant found in a field by a ploughman. This child proved eventually to be an avatara, or incarnation of Lakshmi, consort of Vishnu, for the

purpose of accompanying her lord on earth in his manifestation in the person of Rama. As the daughter of Janaka she is sometimes called Janeki, but her most common name is Sita. See SITA.

JANAKALA, in *Geography*, a town of Sweden, in the province of Tavastland; 10 miles N.N.W. of Tavasthus.

JANALAX, a town of Sweden, in the province of Savolax; 35 miles N.N.W. of Nyflot.

JANEIRO, RIO. See RIO *Janeiro*.

JANEWAY, JAMES, in *Biography*, an English non-conformist divine, was educated at Christ-church college, Oxford. After the Restoration he was deprived of his living in the church, and gladly opened a meeting-house at Rotherhithe, when the act of indulgence was passed. He died in 1674. He was author of "Heaven upon Earth;" "The Saints Encouragement to Diligence;" and "A Token for Children," which has been exceedingly popular and gone through a multitude of editions. Calamy.

JANGAGUR, in *Geography*, a town of Hindoostan, on the Nerbuddah; 15 miles W. of Hurdah.

JANGARA, a town of Bengal; 8 miles N.N.E. of Curruckpour.

JANGAS, a town of Peru, in the diocese of Guamanga; 15 miles E. of Lunaguana.

JANGEGUR, a town of Hindoostan, in the circar of Ruttunpour; 18 miles S. of Ruttunpour.

JANGIPOUR, a town of Bengal; 18 miles N.N.W. of Moorshedabad.

JANGOMA, or YANGOMA, a small kingdom of Asia, in the vicinity of the Birman empire, on the north of Siam. Its extent has been variable on account of its frequent revolutions. According to the Siamese reports, this country is governed by priests. The inhabitants are said to be tall and well proportioned; and in this hot climate their sole garment is a cincture of linen. The women are famed in the East for their gallantry and beauty, in which last quality they surpass those of Pegu; and voluptuous monarchs think their harems enriched and adorned by a concubine from Jangoma. The common food of the inhabitants is rice, and the country is also said to abound in musk, pepper, silk, gold, silver, copper, and gum-benzoic. Little that is certain, however, is known concerning this remote country.

JANGON, a town of Asiatic Turkey, in Caramania; 18 miles N. of Kaifarich.

JANGUIRA, a town of Hindoostan; in Bahar; 13 miles W. of Boglipour.

JANGUIRABAD, a town of Hindoostan, in the circar of Sumbul; 10 miles S.W. of Anapsheer.

JANGUIRPOUR, a small circar of Bengal; W. of Dinagpou.

JANI, a town of Asiatic Turkey, in the government of Sivas; 60 miles S.S.W. of Sivas.

JANIACOPET, a town of Hindoostan, in Bednore; 20 miles W. of Simogu.

JANICULUS, or JANICULARIS *Mons*, in *Ancient Geography*, a mountain of Rome, having to the E. and S. the Tiber, to the W. the fields, to the N. the Vatican; and so much of it as stands within the city-walls is about five stadia in circuit. It was so called either from an old town of the same name, said to have been built by Janus, or because Janus dwelt and was buried there; or because it was a fort of gate (janua) to the Romans, whence they issued out upon the Tuscans. The sparkling fands have at present given it the name of "Mons Aureus;" and by corruption "Montorius." This eminence afforded the best situation for a full prospect of the city; but it has been less inhabited than the other parts on account of the grossness of the air.

It is still famous for the sepulchres of Numa, and the poet Statius. Ancus Martius encompassed the Janiculum with a wall; and for a communication between this place and the city, he built over the river a timber-bridge, of an extraordinary structure, whose parts were held together without being linked with iron. The pontifices were appointed to keep up and repair the bridge.

JANIDUNI, in *Geography*, a town of European Turkey, in Bessarabia, situated on the Black sea; 40 miles W.S.W. of Otchakov.

JANIKAU, or JANKOW, a town of Bohemia, in the circle of Czaflau; six miles S.S.E. of Czaflau.

JANISZKI, a town of Samogitia; 36 miles N.N.E. of Miedniki.

JANITORES, door-keepers among the Romans, the meanest of their slaves, who were commonly chained to their posts.

JANIZARIES, an order of infantry in the Turkish armies; reputed the grand seignior's foot-guards.

Vossius derives the word from *genizers*, which, in the Turkish language, signifies *novi homines*, or *milites*. D'Herbelot tells us, that *janitcheri* signifies a *new band* or *troop*; and that the name was originally given by Amurath I. called the Conqueror, who, choosing out one-fifth part of the Christian prisoners whom he had taken from the Greeks, and instructing them in the discipline of war and the doctrines of their religion, sent them to Hagi Bektasche (a person whose pretended piety rendered him extremely revered among the Turks), to the end that he might confer his blessing on them, and at the same time give them some mark to distinguish them from the rest of the troops. Bektasche, after blessing them in his manner, cut off one of the sleeves of the fur gown which he had on, and put it on the head of the leader of this new militia; from which time, *viz.* the year of Christ 1361, they have still retained the name *janitcheri*, and the fur cap. Others ascribe their origin to sultan Amurath II. in the year 1372, and others again to Orcan, the predecessor of Amurath I.

The janizaries are children of tribute, levied by the Turks among the Christians, and bred up to the military life. They are taken at the age of twelve years, to the end, that forgetting their country and religion, they may know no other parent but the sultan. However, generally speaking, they are not now-a-days raised by way of tribute; for the carach, or tax, which the Turks impose on the Christians, for allowing them the liberty of their religion, is now paid in money; excepting in some places where money being scarce, the people are unable to pay in specie, as in Mingrelia, and other provinces near the Black sea. At present the Turks make no scruple of recruiting their janizaries with natives; and as there are some of these troops in the provinces as well as at Constantinople, it is not easy to ascertain their number. At first this military corps consisted of no more than 12,000 men, and they seemed to be particularly designed as a guard to the emperor's person; and it was afterwards augmented by the successors of the founder to 50,000. Selim, the son of Bajazet, reduced them; but since his reign their number has again so increased, that they have composed the principal force of the Turkish army.

As in the Turkish army, the European troops are distinguished from those of Asia, the janizaries are also distinguished from the janizaries of Constantinople, and of Damascus. At Constantinople Sultan Soliman built barracks for the janizaries, and bestowed a splendid gilding on the ceilings of the porticos, which his successors have always maintained, though they have entirely neglected the discipline which he established. This disregard of good order, by

totally destroying the spirit of the institution, has increased the number of those who receive pay.

Their pay is from two aspers to twelve per diem; for when they have a child, or do any signal piece of service, their pay is augmented. Baron de Tott says, that the pay of the janizaries is duly distributed every three months, and that it has a progressive increase from three aspers to ninety-nine.

Their dress consists of a dolyman, or long gown, with short sleeves, which is given them annually by the grand seignior, on the first day of Ramazan. They wear no turban, but in lieu of that a kind of cap which they call *zarcola*, and a long hood of the same stuff hanging on their shoulders. On solemn days they are adorned with feathers, which are stuck in a little case in the fore-part of the bonnet. On occasions of this kind the janizaries appear without arms, and with their hands crossed before them; and except the red shoes, great blue breeches and bonnet which they are obliged to wear, they dress themselves in what colour they please, and their uniform consists only in the cut of their clothes.

Their arms in Europe, in a time of war, are a sabre, a carabine, or musket, and a cartouch-box hanging on the left side. At Constantinople, in time of peace, they only carry a long staff in their hand. In Asia, where powder and fire-arms were more uncommon, they wore a bow and arrow, with a poignard, which they called *baniane*.

The officer who commands the whole body of janizaries is called the *janizar agafi*; in English, *aga* of the janizaries. He is one of the chief officers of the empire.

The corps of janizaries is divided into regiments, which are called "Baluck," and the commander of every regiment is denominated "Baluck-Aga:" these regiments are distributed into barracks, or "odas," the soldiers of which live together, when they are at Constantinople or in the provinces. M. de Peyssonel, in his "Structures on the Memoirs of Baron de Tott," mentions the division of them into "Ortas," "Buluks," and "Seymens," forming in all 196 companies, *i.e.* 101 ortas, 61 buluks, and 34 seymens. These companies are again subdivided. To this corps also belong the "Yerlis," or provincial militia of the janizaries, commanded by a "Serdar," in the cities which are not considered as places of strength, and where they have no janizary-aga; also the "Yamaks," or garrisoned invalids; and the "Otouraks," or invalids exempted from service. In the garrison and in the field they are divided into "Sag Kol," and "Sol Kol," or right wing and left wing, each of which has its separate standard and respective aga, one of whom is styled "Sag Kol Agaffi," and the other "Sol Kol Agaffi." There are also companies of volunteers, which are raised in time of war, and maintained by the officers at their own expence. To this class of military also belong gunners, bombardiers, pioneers, miners, &c. In the army the janizaries encamp together by tens; every ten having a horse to carry their small baggage and cloaks, with a servant to cook for them; and every twenty a camel to carry two tents, two large carpets on which to sleep, two kettles, and two leather vessels in which to carry water; when they cannot get camels, they make use of waggons furnished by the country through which they pass. With regard to their tactics, they form their battalions very deep, and their squadrons very large; they are exercised in the use of their arms, and to preserve their ranks and files; but with less order and exactness than the troops of the Christians. They never had pikes, but their favourite weapon has always been the scymetar. In former times they fought with darts, arrows, and hatchets; but, at present, the whole of their infantry

infantry is provided with firelocks. M. de Bonneval attempted to instruct them in handling the bayonet, and formed a small body to the use of that weapon; but it declined and dwindled away since his death. Their ordinary mode of fighting is to fire their pieces and then fall on the enemy, sabre in hand, with very loud shouts, but without any order, notwithstanding which their number, their impetuosity, and the weight of their shock, render them very formidable, particularly in the first onset; after one or two repulses their fury abates, and it is not easy to bring them again to the charge.

Though the janizaries are not prohibited marriage, yet they rarely marry, nor then, but with the consent of their officers; as imagining a married man to make a worse soldier than a bachelor.

The janizaries were at first called *jinja*, that is, footmen, to distinguish them from the other Turks, the troops whereof consisted mostly of cavalry.

Vigenere tells us, that the discipline observed among the janizaries is extremely conformable, in a great many things, to that used in the Roman legions.

The janizaries were heretofore a body formidable even to their masters, the grand seigniors. They deposed Bajazet II. in 1512; they procured the death of Amurath III. in 1595. Osman II. they first stripped of his empire, and afterwards of his life, in 1622; and in about two months dethroned Multapha, whom they had made his successor; and in 1649 they deposed sultan Ibrahim, and at last strangled him in the castle of the Seven Towers; and in 1730 they obtained the sacrifice of the grand vizier, the reis effendi, and the captain bashaw, and deposed and imprisoned Achmet III. and advanced the sultan Mahomet, son of Multapha II. from prison to the throne in his stead. The number of real janizaries has been variously estimated; but the privileges belonging to their order, such as exemption from taxes, and the performance of public duties, have induced many persons to bribe the officers, in order to their being admitted into the number of janizaries without pay.

Baron de Tott says that the number of those who receive pay amounts to 400,000, but that of those who are enrolled is unlimited. He allows, however, that 20,000 are scarcely ever collected at once, and that this number is principally composed of those who receive but little pay, or, perhaps, none; having only entered the service to obtain a right to it. The enrolled janizaries are so numerous, says M. de Peyssonel, as to amount, if their number could be ascertained, to several millions; nevertheless, they are only estimated at 40,000, on which account they are called "Kirk in Koul," or the forty thousand slaves; and though there may be 400,000 on the pay-list, it is certain the treasury does not issue pay for more than 40,000, that being only received by the janizaries of the "odas," or barracks, at Constantinople, and those who in the garrisons have followed their "kettle." All those who are not with the standard are called "Yamaks," and receive no emolument.

Although the janizaries were once the terror of the natives, and sometimes of the sultans themselves, whom they have by their insurrections and rebellions occasionally dethroned and murdered, their valour has declined, their discipline is relaxed, and their tumultuary array is incapable of contending with the order and weapons of modern tactics; but at the time of their institution, they possessed a decisive superiority in war; because a regular body of infantry, in constant exercise and pay, was not maintained by any of the princes of Christendom.

The janizaries of Syria are an enrolled national militia, consisting of a certain number in each pachalic, who must

hold themselves in readiness to march whenever they are required. As there are certain privileges and exemptions annexed to their body, there is a competition for obtaining admission into it. Formerly they were subject to regular exercise and discipline; but all regard to this has declined, that within the last 60 or 80 years, says Volney (*Travels in Egypt and Syria*, vol. ii.), there no longer remains the slightest trace of their ancient good order. These pretended soldiers are only a crowd of artizans and peasants, as ignorant as the rest of that class, and infinitely less tractable. When a Pacha abuses his authority, they are always the first to erect the standard of sedition. They deposed and expelled Abdi Pacha from Aleppo, and compelled the Porte to send another in his stead. The Turkish government, it is true, avenges itself by ordering the most active mutineers to be strangled; but, at the first opportunity that occurs, the janizaries create other chiefs, and affairs return to their usual course. The Pachas, seeing themselves thwarted by this national militia, have had recourse to the expedient practised in similar cases; they have taken foreign soldiers into their service, who have neither friends nor families in the country. These are of two sorts, cavalry and infantry. The former are called *Delibaches* and *Leventi*, and the latter *Mograbians*, which see respectively.

In Egypt the janizaries, and also the Azabs, which two bodies of the military corps were formerly the terror of the Pacha, have been so degraded by the influence of the Mamlouks, that they are now as insignificant as himself. The cause of this has been the corrupt and wretched government of the Turks; for, previously to the insurrection of Ibrahim Kiaya, the number of Turkish troops, which should consist of 40,000 men, infantry and cavalry, had been reduced to less than half that number by the avarice of their officers, who diverted the pay to their own use. After Ibrahim, Ali Bey completely destroyed their consequence. He first displaced all the officers who gave him umbrage; left unfilled the places that became vacant; deprived the commanders of all influence; and so degraded all the Turkish troops, that at this day the janizaries, the Azabs, and the five other corps, are only a rabble of artizans and vagabonds, who guard the gates of those who pay them, and tremble in the presence of the Mamlouks, in whom the whole military force of Egypt consists. See MAMLOUKS.

JANIZARIES, at Rome, are officers or pensioners of the pope, called also *participantes*, on account of certain rites or duties which they enjoy in the annates, bulls, or expeditions, and the Roman chancery.

Most authors are mistaken in the nature of their office. The truth is, they are officers of the third bench, or college of the Roman chancery. The first bench consists of writers, the second of abbreviators, and the third of janizaries; who are a kind of correctors and revisors of the pope's bulls.

JANKOONIES TOWN, in *Geography*, a town of Africa, in Loango, on the coast. S. lat. 4° 30'.

JANMIER, a town of Hindoostan, in Guzerat, on the gulf of Cambay; 38 miles S. of Gogo.

JANNA, or JANNINA, a considerable town of European Turkey, in the province of Thessaly, the see of a Greek bishop, situated on a lake which communicates with the river Peneus, and gives name to the province; 40 miles W. of Larissa. N. lat. 40°. E. long. 21° 38'.

JANNANINS, in *Modern History*, the name which the negroes, in some of the interior parts of Africa, give to spirits which they apprehend to be the ghosts or souls of their ancestors, and which they go to the tombs to consult and worship. Every negro has his tutelary jannanin, and so has likewise every village, to whom private and public worship

is respectively addressed. The women, children, and slaves are forbid to attend their public worship.

JANNEQUIN, CLEMENT, in *Biography*, a French composer, who flourished early in the 16th century, during the most splendid period of the reign of Francis I. when, though we hear of but few great musicians at his capital, yet so many subsisted; particularly in the Low Countries, that music in parts became common from that school all over Europe; and Jannequin, though he is placed by Walther in the middle of the 16th century, must have flourished much earlier; as a curious composition by him, called "La Bataille," printed in the tenth book of "French Songs for four Voices or Instruments," is preserved in the British Museum, which, though it did not appear in this edition, by Tylman Susato, of Antwerp, till 1545, must have been composed long before that time; for the song was written and set on occasion of the famous and obstinate battle of Marignan, which lasted two days, and was fought during the first year of Francis I. 1515, between the French and Swiss, who disputed their passage to the Milanese.

As this composer seems the first who tried to prove that music as well as painting and poetry was an imitative art, we shall give the whole title of the book of French songs for four voices or instruments preserved in the British Museum.

"Le Dixiesme livre des Chançons, contenant La Bataille à 4, de Clement Jannequin, avec la cinquiesme partie de Phillippe Verdelot, si placet, et deux Chasses du Lievre à 4 Parties, et le Chant des Oyseaux à 3, 1545.

"La Bataille, ou défaite des Suisses à la journée de Marignan; à 4 ou à 5, Clem. Jannequin.

"Le Chant des Oyseaux, à 3. Nic. Gombert.

"Le Chasse du Lievre, à 4. Incognito Authori.

"La Chasse du Lievre, à 4. Nic. Gombert."

In the Battle-piece, as well as in the other imitative pieces in the same collection, there are several long movements in the Bataille, in which the noise and din of war, during this memorable conflict, are imitated. In the song of birds, and in each composition called "The Chase," or hunting of the hare, the composers have severally tried to express the words with more exactness than we had seen attempted before. Indeed, the best counter-point and the most ingenious contrivances, with respect to musical composition, anterior to this period, are contained in the masses and motets of the church, where nothing like expression, or even the true accent of words is attempted. But here, though clumsily done, we have specimens of musical imitations, it should seem, for the first time.

The name and works of Jannequin had penetrated into Italy early in the 16th century, as we find by Zarlino, the elder Doni's catalogue of music, Pietro Pontio, and Zacconi. A work of his, entitled "Inventiones Musicales," in four and five parts, was published at Paris and Lyons, 1544.

JANNI, *Str.*, in *Geography*, a small island in the Mediterranean, near the coast of Naples. N. lat. 39° 59'. E. long. 13° 52'.

JANNOCK, a kind of oaten bread, much used in the northern parts of England, and made of four leaven.

JANOHAH, in *Scripture Geography*, a city of Ephraim, on the frontiers of the half tribe of Manasseh. Josh. xvi. 6. Eusebius places a town called "Jano," 12 miles from Schechem or Naplouse, in the Acrabatene, and another 3 miles from Legio, south.

JANOURA, in *Geography*, a town of Hindoostan, in Bahar; 16 miles S.W. of Bahar. N. lat. 25° 8'. E. long. 85° 34'.

JANOW, a town of Poland, in the palatinate of Ka-

miniec; 44 miles N.N.W. of Kaminiac.—Also, a town of Poland, in the palatinate of Lublin; 36 miles S. of Lublin.—Also, a town of Lithuania, in the palatinate of Brzesc; 24 miles S.W. of Pinsk.

JANOWIECZ, a town of Poland, in the palatinate of Sandomirz; 16 miles E. of Radom.

JANOWITZ, a town of Bohemia, in the circle of Kaurzim; 8 miles S. of Bentsehow.—Also, a town of Bohemia, in the circle of Pilsen; 30 miles S.S.W. of Pilsen. N. lat. 49° 19'. E. long. 13° 8'.

JANOWITZKY, a town of Bohemia, in the circle of Czassau; 9 miles S.W. of Czassau.

JANOWKA, a town of Poland, in the palatinate of Volhynia; 40 miles N.E. of Zytomiers.

JANOWOW, a town of Aultrian Poland, in Galicia; 16 miles W.S.W. of Lemberg.

JANOZKI, JOHN DANIEL, in *Biography*, was born at Wiemar in 1720. He distinguished himself by his literary talents; and, by several useful works which he published, rendered great service to the literary history of Poland. His principal works are, 1. "Letters on Criticism," in two volumes; 2. "Account of rare Polish Books in the Zaluski library;" in this work he gives the titles of the books at full length, with an account of their contents; relates the history of them, makes known his opinion of their merits, and intersperses the whole with interesting anecdotes, respecting the lives, services, and characters of the authors; 3. "A Dictionary of living Authors in Poland;" and, 4. "Polonia Litterata nostri Temporis." In another work, entitled "Janociana, sive clarorum atque illustrium Virorum Poloniz Auctorum, Mecenatumque Memoriz miscellanæ," the author gives a farther account of the Polish writers and their productions. His information, besides the authors, comprehends also friends and promoters of the sciences, whether Poles or foreigners, settled in that country. The two volumes comprize nearly 300 names in alphabetical order. Gen. Biog.

JANPOUR, in *Geography*, a town of Bengal; 20 miles S.W. of Midnapour. N. lat. 22° 15'. E. long. 87° 7'.

JAN-RAIA, in *Botany*, a name contrived by Plumier, in defiance of orthography, as usual with his countrymen, to perpetuate the memory of the great John Ray, the word *Raia* being already bestowed on a genus of fishes. Linnæus improved it to RAJANIA, to which article we refer our readers.

JANSAW, in *Geography*, a town of Prussia, in the province of Oberland; 24 miles E. of Marienwarder.

JANSENISM, in *Ecclesiastical History*, the doctrine of Cornelius Jansen, commonly called *Janfenius*, bishop of Ypres, in Flanders, chiefly with relation to grace and free-will.

Janfenius was born of Catholic parents in Holland, and studied at Utrecht, Louvain, and Paris.

Janfenism made no great noise in the world; till after the death of its author, in 1638, when Fromond and Calenus, his executors, published his book, entitled "Augustinus." This book had been the labour of 20 years, was just finished before the author's death, and published at Louvain in 1640. Janfenius was led to engage in this work by the controversy that was carried on, in the beginning of the 17th century, between the Jesuits and Dominicans, concerning the nature and necessity of divine grace; the decision of which had, towards the conclusion of the preceding century, been committed by Clement VIII. to a select assembly of learned divines. These arbiters, after much examination, delivered their opinion to the pontiff, that the sentiments of the Dominicans, concerning grace, predestination, human liberty, and original sin, were more conformable

conformable to the doctrine of scripture, and the decisions of the ancient fathers, than the opinions of Molina, which were patronised by the Jesuits. The former, they observed, inclined to the tenets of Augustine, and the latter bore a striking resemblance to the Pelagian heresy. In consequence of this declaration, Clement seemed resolved to condemn the Jesuits, and to determine the controversy in favour of the Dominicans. In 1602 the Jesuits prevailed on the old pontiff, by intreaties, menaces, arguments, and complaints, to re-examine this intricate controversy, and to undertake the office of principal arbitrator. For this purpose he chose a council, called the congregation *de auxiliis*, or the congregation of *aids*, composed of 15 cardinals, nine professors of divinity, and five bishops, which, in the space of three years, assembled 78 times. The death of Clement, in 1605, prevented his pronouncing a decisive sentence with regard to this controversy; nor are his sentiments certainly known, though the Jesuits and Dominicans contend, that his decision would have been favourable to their respective party. The proceedings of this congregation were resumed, in 1605, by order of Paul V. the successor of Clement. The result of many solemn deliberations was, that the whole controversy, instead of being decided, should be suppressed; and that each of the contending parties should have the liberty of following their respective opinions. Paul V. declined a public determination of the controversy, through apprehension of offending either the king of France, who protected the Jesuits, or the king of Spain, who warmly maintained the cause of the Dominicans. The flame of controversy broke out again with new violence in the year 1640, on the publication of Jansenius's book, which was divided into three parts: the first being historical, and containing a relation of the Pelagian controversy, which arose in the fifth century: in the second the author gives an accurate account and illustration of the doctrine of Augustine, relating to the constitution and powers of the human nature, in its original, fallen, and renewed state: and the third part contains his doctrine relating to the aid of sanctifying grace procured by Christ, and to the eternal predestination of men and angels. The design of Jansenius, in this work, was to shew in what manner the important points in debate had been understood and explained by Augustine, whose name and authority were universally revered in all parts of the Roman Catholic world. The Dominicans, who followed the sentiments of Thomas Aquinas concerning the nature and efficacy of divine grace, derived very considerable advantage from this publication; whilst the Jesuits considered it as not only a tacit but formidable refutation of their opinions concerning human liberty and divine grace. They therefore exerted their most zealous endeavours to obtain a public condemnation of it from Rome; and they succeeded so far as to procure a prohibition of the perusal of it, by the Roman inquisitors, in the year 1641; and in 1642 a solemn bull of Urban VIII. condemning it as fraught with several errors that had been long banished from the church. However, the decisions of the inquisition, and bull of the pontiff, were disregarded in many parts of the Roman church. The doctors of Louvain, the followers of Augustine in the Netherlands, and the abbot of St. Cyran, and other famous and learned men, known under the denomination of the Authors of Port-royal, in France, opposed the proceedings of the Jesuits, and strenuously supported the cause of Jansenism, though the greatest part of the French theologians engaged in behalf of the Jesuits. The dispute was now become very general and violent; and both parties exerted all their learning, art, interest, and power, to vindicate their respective cause. The Jansenists recurred to miracles in

confirmation of their doctrine; and the history of the controversy furnishes many legendary tales of miraculous cures wrought in its favour; the first of these miracles occurs in 1656, when a pretended thorn of that derisive crown that was put upon our Saviour's head by the Roman soldiers, is reported to have performed several wonderful cures in the convent of Port-royal: these were succeeded by other prodigies in the years 1661 and 1664. The same pious frauds were revived in 1725, 1727, and 1731, when the bones of the Abbé de Paris, which were interred at St. Medard, are said to have been instrumental in performing innumerable miracles. However, the opposers of the doctrines of St. Augustine selected five propositions out of Jansenius's book, which, by the interest and importunities of the Jesuits, were condemned by a public bull of Innocent X. in 1653. These propositions contained the following doctrines:

I. Some commands of God are impossible to righteous men, even though they endeavour, with all their powers, to accomplish them; the grace being wanting by which they should be enabled to perform them. II. In the state of corrupted nature, a man never resists inward grace. III. To merit and demerit in the present state of corrupt nature, it is not requisite a man should have that liberty which excludes necessity: that which excludes constraint is sufficient. IV. The Semipelagians admitted the necessity of inward preventing grace to each act in particular, and even to the beginning of faith; but they were heretics, in regard they asserted, that this grace was such as that the will of man might either resist or obey it. V. It is Semipelagianism to say, that Jesus Christ died, or shed his blood, for all men in general.

Of these propositions the pontiff declared the first four only heretical; but he pronounced the fifth rash, impious, and injurious to the Supreme Being.

The Jansenists, availing themselves of a subtle distinction invented by Arnaud, considered separately in this controversy the matter of doctrine, and the matter of fact, *i. e.* they acknowledged themselves bound to believe that the five propositions above mentioned were justly condemned by the Roman pontiff; but they maintained, that the pope had declared, and consequently, that they were not bound to believe, that these propositions were to be found in Jansenius's book, in the sense in which they had been condemned. But this artful distinction was of no long service to them; for Alexander VII. issued out a solemn bull in 1656, declaring, that the five propositions that had been condemned were the tenets of Jansenius, and were contained in his book; and in 1665 he sent into France the form of a declaration, that was to be subscribed by all who sought preferment in the church, affirming that the five propositions were to be found in the book of Jansenius, in the same sense in which they had been condemned by the church. This declaration produced the most deplorable tumults: the Jansenists maintained that the decisions of the pope, so far as they were not confirmed by a general council, with regard to matters of fact, were fallible; and the Jesuits, on the contrary, that unlimited confidence in the papal decisions, both with respect to matters of fact and of opinion, was an essential character of a well-grounded and divine faith. The Jesuits prevailed, and the Jansenists suffered exile, imprisonment, and various kinds of persecution. Clement IX. in consequence of the spirited remonstrance of several bishops, and the earnest application of Anne Genevieve de Bourbon, duchess of Longueville, accepted a conditional subscription to the declaration of his predecessor, allowing the Jansenists the privilege of interpreting it in their own sense. This indulgence restored tranquility, and produced a period in this controversy, commonly called the "Peace of Clement IX."

but it was soon disturbed again by a public edict of Lewis XIV. and totally abolished after the death of the dukes of Longueville, in the year 1679. The famous Arnaud retreated on this occasion into Holland, where he gained over the Romish congregations to the Jansenist party: and this party, secured under the protection of the Dutch government, has since prevailed in that country. The Jansenists were particularly offensive to the Jesuits, on account of the austerity of their party, and the severity that reigned in their system of moral discipline and practical religion: for they have exclaimed against the corruptions of the church of Rome, both with regard to its doctrines and morals; and urged the necessity of instructing the people in the doctrines and precepts of Christianity: with this view they have maintained that the holy scriptures and public liturgies should be perused by the people in their mother tongue; and taught, that true piety does not consist in the observance of pompous rites, or in the performance of external acts of devotion, but inward holiness and divine love. This apparent piety of the Jansenists has, however, been unhappily blended with superstition and fanaticism; and they have been branded, not altogether without reason, with the denomination of Mystics and Rigourists. (See QUIETISM.) The controversy relating to Jansenism, which was one of the principal sources of that division which reigned within the papal jurisdiction, has been carried on with great animosity in France and the Netherlands; and the Jansenists were for a considerable time much inferior to the Jesuits in number, power, and influence, though they equalled their adversaries in resolution, prudence, and learning, and surpass them in sanctity of manners and superstition, by which they excite the respect of the people. The United Provinces, particularly the Netherlands, have afforded them an asylum on many occasions: nevertheless the Jesuits, though they had no legal toleration in the republic, have gained ground among the Dutch papists. They had a flourishing chapel in the city of Utrecht, and places of worship in several other cities, and in a great number of villages. Towards the close of the 17th and the commencement of the 18th centuries, the cause of the Jansenists acquired reputation, by a French translation of the New Testament, made by the learned and pious Paschasius Quenel, a priest of the Oratory; in the annotations to which he has artfully blended the quintessence of Jansenism. This work, at the instigation of the Jesuits, and particular application of Lewis XIV. to the court of Rome, was condemned by Clement XI. who, in 1713, issued out the famous bull *Unigenitus*, in which Quenel's New Testament was condemned, and one hundred and one propositions contained in it pronounced heretical. The controversy relating to Jansenism was much heated and increased, instead of being mitigated or suspended, by this despotic and ill-judged edict. The Jansenists were again obliged to recur to writing, and even to miracles and visions, and pretended revelations for the support of their declining cause. However, the storm of resentment that afterwards arose against the Jesuits, and that has been attended with the extinction of their order in Portugal, France, and in all the Spanish dominions, has disarmed the most formidable adversaries of Jansenism, and must be considered as an event highly favourable to the Jansenists. Mosheim's *Ecl. Hist.* vols. v. and vi. Eng. ed.

JANSENIUS, CORNELIUS, in *Biography*, a learned Flemish prelate, born at Hulst in the year 1510, and educated at Ghent and Louvain, became a proficient in the Hebrew, as well as Greek and Latin languages, and devoted himself to the study of the scriptures. After occupying some subordinate stations in the exercise of his ministry, he was appointed professor of divinity at Louvain, and admitted

to the degree of doctor of divinity. In the famous council of Trent he commanded respect by his learning and modesty, and upon his return to Flanders in 1568, he was nominated the first bishop of Ghent, where he died in 1576. His works were "A Paraphrase on the Psalms," with copious notes, in Latin, printed at Louvain in 1569; "Notes on the Books of Proverbs, Ecclesiasticus, the Canticles, and the Book of Wisdom," printed in 1586: "Commentaries upon some Passages in the Old Testament," &c. His chief work, however, was the "*Concordia Evangelica*," first printed in 1549 and frequently reprinted. Of this work Dupin says, that it is the most perfect harmony of the four gospels which had till that time appeared. To the author he pays a very distinguished tribute of respect, as a very able expofitor of scripture, and eminently characterized by his learning, judgment and perspicuity. Dupin. *Gen. Biog.*

JANSENIUS, CORNELIUS, bishop of Ypres and founder of the Jansenists, was born at a village near Leerdam, in Holland, in the year 1585; and having commenced his studies at Utrecht, finished them at Louvain in 1602. Removing to Paris on account of the state of his health, which had been impaired by his assiduous application, he renewed his connexion with the abbot of St. Cyran, with whom he had commenced an acquaintance at Louvain. At Bayonne these two friends, after temporary separation, met again, and concurred for five or six years in the study of the fathers, and particularly of St. Augustine. The abbot Du Verger was here promoted to a canonry in the cathedral, and Jansenius was placed at the head of a college. Upon Du Verger's removal to Paris, Jansenius returned to Louvain, and was soon appointed principal of the college of St. Pulcheria. In 1617, he took his degree of doctor of divinity, and was admitted one of the professors of that faculty, in which office his talents and learning were conspicuously displayed. On occasion of the interference of the Jesuits with some privileges belonging to the university of Louvain, Jansenius was selected as a fit person to state and vindicate their rights in an embassy to the king of Spain. For this purpose he made two journeys into that country, viz. in 1624 and in 1625; and in the year 1630 he was appointed by the king professor of the holy scriptures in the university of Louvain. In this year he engaged in a controversy with the Protestants; and this controversy produced on his part a piece entitled "*Alexipharmacum*," printed in 1630; another under the title of "*Notarum Spongia*," &c. in 1631. Another controversy of a similar kind engaged his attention in 1634, in the conduct of which he had recourse, in a manner that reflects disgrace on his name and memory, to measures of persecution against his adversary, instead of contenting himself with the more appropriate weapons of argumentation. In the year 1635 he published a work, which, however acceptable to his patron, the Spanish monarch, conferred no honour on the spirit of the writer; it was entitled "*Alexandri Patricii Armacani, Theologi, Mars Gallicus, seu Justitiæ Armorum et Fœderum Regis Gallix Libri duo*," and contains the most malignant and invidious exclamations against the services which were rendered by France to the Protestants of Holland and Germany, to the prejudice of the Romish religion. In consequence of this publication he was promoted to the bishopric of Ypres. His conduct on this occasion, and the publication of the above-mentioned book, are said to have first excited the enmity of cardinal Richelieu against the author and his followers, and the partiality of the court in favour of the Jesuits. Jansenius, however, sedulously engaged in the reform of his diocese; but was prevented from accomplishing the work which he had begun by his death, which happened in 1638, when he was about

53 years of age. He died highly respected for learning and other eminent qualifications, as well as for his piety and virtues. His works, besides those already mentioned, were "Tetrateuchus, five Commentarius in IV Evangelia," 4to. "Pentateuchus, five Commentarius in V libros Moysis," 4to. "Analecta in Proverbia, Ecclesiasten, Sapientiam, Habacuc, et Sophoniam," 4to.: "De VI obligandi Conscientias quam habent Edicta regia super Re Monetaria:" "De Juramento quod publica Auctoritate Magistratui designato imponi solet;" "Oratio de interioris huminis Reformatione," and, more particularly deserving of mention, his "Augustinus, seu Doctrina Sti. Augustini de Humanæ Naturæ Sanctitate, Ægritudine, Medicina, adversus Pelagianos et Massilienses," fol. This latter work occasioned the controversy, of which we have given an account under the article Jansenism, to which the reader is referred. Dupin. Bayle. Mosheim.

JANSENIUS, JAMES, a learned theological professor at Louvain, was born of Catholic parents at Amsterdam in the year 1547, and completed his studies at Louvain, whither he was sent for this purpose in 1564. In 1575 he was admitted a licentiate in divinity, and was afterwards nominated first president of the new Augustine college. Having risen gradually to several offices of honour and duty in the church, he was at last, in 1614, appointed dean of the collegiate church of St. Peter's at Louvain; and died in 1625. Of his works, which have been held in high esteem, we shall enumerate "Expositio in Prophetam Job," folio; "Commentarius et Expositio in Pfalmos Davidicos," 4to.; "Commentarius in Canticum Cantorum," 8vo.; "Expositio in Evang. Joann." 8vo.; "Institutio Catholici Ecclesiastæ;" "Liturgica;" "In sacrum Missæ Canonem;" "Enarratio Passionis," &c. &c. Moreri. Gen. Biog.

JANSI, in *Geography*, a town of Hindoostan, in the circar of Gohud; 110 miles S. of Agra. N. lat. 25° 32'. E. long. 78° 57'.

JANSONS, MESSRS. in *Biography*, two brothers, the most celebrated performers on the violoncello in France, at the time when M. Laborde published his "Essais sur la Musique," and consequently, according to that author, "the best in the universe." These were rivals of the two brothers; Dupont, whose performance gave equal delight. It was hardly possible to play an adagio with more delicacy, taste, and feeling than the eldest Janfon. The eldest Dupont's execution was truly astonishing; and it is among extraordinary circumstances, that four such performers on the same instrument should flourish at the same time in one city.

JANSSENS, ABRAHAM, an historical painter, born at Antwerp in 1569. He possessed great powers in the practical parts of the arts, but, negligent and dissipated, he wasted those powers; and fell into indigence. Being contemporary with Rubens, he was mortified at the success of his younger rival, who drew from him the admiration of the public, and in a fit of ill humour challenged him to paint a picture for fame; desiring to submit their reputation to impartial judges. This proposal was rejected by Rubens, who answered in a mild and becoming manner, that he submitted to him; and the world would do justice to them both. The churches of the Low Countries possessed many excellent works of this master; but his chef-d'œuvre is the Resurrection of Lazarus in the gallery at Duffeldorf.

JANSSENS, HONORIUS VICTOR, a painter, born at Brusfels in 1664. Having applied sedulously to the practice of the art, and made much proficiency, he was employed by the duke of Holstein at a pension of 800 florins, and after-

wards enabled, by the same munificent patron, to pursue his studies in Italy.

In Rome he studied the works of Raphael, and became eminent in fame. He afterwards associated with Tempesta the landscape painter, and painted figures in his pictures.

In general his pictures are small in size, and have somewhat of the style of Albano. His invention was copious, and his works are very pleasing. He died in 1739, at the age of 75.

JANSSENS, CORNELIUS, called also *Johnson*, a portrait painter of very extraordinary merit. He was born at Amsterdam; when, is not exactly ascertained. It appears that he painted in England as early as the year 1618, in the reign of James I. Here he continued to paint with very great and deserved success till the arrival of Vandyke, whose transcendent talents and taste Janssens was not quite equal to cope with. On the breaking out of the civil war he returned to his own country, in 1648; leaving behind him a number of excellent characteristic portraits in the great families of this island.

He retired first to Middleburg, and afterwards to Amsterdam, where he died in 1665.

His style of design was formal and void of taste, but his features are justly marked, and the faces of his portraits have great character, and an air of nature, possessing much sweetness of tone in the colouring, and finished very highly; too much so indeed. His pictures are generally on wood, and with black draperies; an arrangement adopted frequently by Rubens and Vandyke.

JANTECA, in *Geography*, a town of Hindoostan, in the circar of Adoni; 59 miles N.W. of Adoni.

JANUARIUS, ST., in *Biography*, bishop of Benevento, who was beheaded at Puzzuoli in the persecution of Diocletian. His body was brought to Naples, where a beautiful chapel is erected to his memory in the cathedral. What renders his name remarkable, is a pretended miracle exhibited yearly by the priests, who say they have the saint's real blood enclosed in a phial, which is either liquid or congealed at the pleasure of these devout gentlemen. This wretched mummery is always practised when Mount Vesuvius shews signs of a convulsion, and the people believe that the influence of Januarius will prevent an earthquake. This pious fraud will scarcely live beyond the changes which are now taking place in Italy. Moreri. Addison's Travels.

JANUARIUS, ST., *Order of*, was instituted July 2, 1738, by the Infant Don Carlos, then king of Jerusalem and the two Sicilies, and afterwards king of Spain, who was grand master of the order, and the honour of which devolved on the king of the two Sicilies. The ensign of the order is a star of eight points, enamelled white, edged with gold: in the centre is represented a bishop, with half his body in clouds: on the reverse is a book, on which are two vials red, surrounded with two palms, all enamelled in proper colours. The collar of the order is of gold, composed of castles, banners, mitres, roses, &c. The badge in ordinary days is worn pendant to a broad deep-blue ribband.

JANUARIUS'S BLOOD. See *Religious uses of BLOOD*. The head of this saint is occasionally carried in procession at Naples, in order to stay the eruption of Vesuvius.

JANUARY, the name of the first month of the year, according to the computation now used in the West.

The word is derived from the Latin Januarius, a name given it by the Romans, from Janus, one of their divinities, to whom they attributed two faces; because on the one side the first of January looked towards the new year; and, on the other, towards the old one. The word Janu-

arius may also be derived from *janua*, gate; in regard to this month being the first, which is, as it were, the gate of the year.

January and February were introduced into the year by Numa Pompilius; Romulus's year beginning in the month of March.

The Christians heretofore fasted on the first day of January, by way of opposition to the superstition of the heathens, who, in honour of Janus, observed this day with feasting, dancings, masquerades, &c.

JANUB, in *Geography*, a town of Persia, in the province of Kerman; 120 miles E. of Kabis.

JANVILLE, a town of France, in the department of the Eure and Loire, and chief place of a canton, in the district of Chartres, 21 miles S.E. of it. The place contains 1803, and the canton 10,368 inhabitants, on a territory of 290 kilometres in 23 communes.

JANUM, in *Scripture Geography*, a city of Judah, mentioned Josh. xv. 53.

JANUNA, in *Geography*, a town of Hindoostan, in Goondwanaah; 20 miles N. of Chanda.

JANUS, in *Mythology*, a divinity of the Romans, who, as it is said, had the custody and care of their gates (*Janua*). As to the origin of this deity, ancient authors are not agreed; but the most general opinion is, that he was not a native of Italy, but that he came thither from Perrhebia in Thessaly, where, being a descendant from Deucalion by Ion his son, as fabulous history reports, he was originally settled. Ryckius dates the arrival of Janus with his colony in Italy in the 146th year before the taking of Troy; but as Theophilus of Antioch assures us, that Chronos, called by the Latins Saturn, and who was received by Janus into Italy, lived 321 years before the taking of Troy, there must have been more than an age and a half between him and Janus. Hence we should be led to conclude, either that Saturn never came into Italy, or that he arrived there long before the time of Janus. Antiquity, however, ascribes co-existence to these princes: therefore we must suppose that there was another Saturn, contemporary with Janus, whose original name was Stercus, the father of Picus; and that being deified by Janus, he was, after his apotheosis, denominated Saturn. To this purpose we learn from Aurelius Victor, that Janus, having landed in Italy, and made various conquests, took possession of a mountain, and there built a city which he called after his own name, "*Janiculum*." In the time of his reign, Saturn, banished from his own country, landed also in Italy; where Janus kindly received him, and made him his associate in the empire. Saturn built a fortress near Janiculum and called it "*Saturnia*." The part of the country which Janus first occupied was Latium; and it is said that the inhabitants, before the arrival of this prince, led a savage life, without laws and almost without religion; and that he softened the ferocity of their manners, brought them to live together in cities and villages, gave them laws, and caused his subjects to enjoy under his reign a happiness which they had never known before; accordingly this period was denominated the golden age. From this change of condition, produced by the counsels and influence of Janus, the inhabitants rendered him divine honours; and he has been regarded, not as one of the great gods, but as one of the *Indigetes*. To him also, as we learn from Macrobius, all the passages from or to the houses were consecrated; because, according to the Mythologists, every family in the time of Janus was distinguished by religion and sanctity. It is added, that he was the first who built temples, and instituted ceremonies of religion. Concerning the reason of his being represented with two faces, we have different accounts. Some say that

he was thus exhibited, because he commanded two nations; or because, upon his sharing the kingdom with Saturn, he caused medals to be struck, bearing on one side a head with two faces, to express that his power was divided between Saturn and himself, and that his dominions were to be governed by the counsels of both. Plutarch gives another account and says, that this representation was intended to intimate that this prince and his people had, by wife and salutary counsels, passed from a wild rustic life to a life of civilization and humanity. Others say this appearance, or "*bifrons*," *i. e.* double faced figure, denoted that Janus knew the past and foresaw the future. Others again, who are of opinion that Janus represented the sun, pretend that he is exhibited double, because he opens the day when he rises, and shuts it when he sets. From Athenæus we learn that Janus had two faces, one before, the other behind; and that he gave his name to a river and to a mountain on which he had settled. He is said to have been the first who invented crowns, ships, and barges, and who coined money of brass. Hence it happens, that several towns in Greece, Italy, and Sicily, coin money with a double head, with a barge on the reverse, or a crown, or a ship. Some authors say, that the two faces represent his presiding over *January* (which see); and others say that the two heads are those of Janus and Saturn. For an account of his temple; see the next article.

JANUS, *Temple of*, in *Ancient History*, a square building at Rome (as some say) of entire brass, erected by Romulus, after he had made peace with the Sabines, or, as Rollin says, by Numa, as an acknowledgment to the gods for the tranquillity Rome enjoyed at his accession to the throne; it was so large as to contain a statue of Janus five feet high, with two faces, intimating, that the Romans and Sabines were united into one people, and that the two kings, Romulus and Tatius, made but one head to govern them. It had brazen gates on each side, which were always kept open in time of war, and shut in time of peace. But the Romans were so much engaged in war, that this temple was shut only twice from the foundation of Rome till the reign of Augustus, and six times afterwards. It was first shut during the long reign of Numa, who instituted this ceremony. 2. In the year of the city 519, B. C. 235; after the end of the first Punic war. 3. By Augustus, after the battle of Actium, in the year of Rome 723, B. C. 31. 4. On Augustus's return from the war which he had against the Cantabrians in Spain, A. U. C. 729. B. C. 25. 5. Under the same emperor, in the year of Rome 744, about ten years before the birth of Christ, when there was a general peace throughout the whole Roman empire, which lasted twelve years. 6. Under Nero, A. U. C. 811. A. D. 58. 7. Under Vespasian, A. U. C. 824. A. D. 71. 8. Under Constantius, when upon Magnentius's death he was left sole possessor of the empire, A. U. C. 1105. Some dispute the authority on which it is said to have been shut by Constantius, and say that the last time of its being shut was under Gordian, about the year of Rome 994, A. D. 241. Virgil gives us a noble description of this custom:

"Sunt geminæ Belli portæ, sic nomine dicunt, &c."
Æn. lib. vii. ver. 607, &c.

The origin of this custom is not certainly known. Accordingly when the consul, appointed to command the army, was ready to set out, he went to this temple, attended by the senate, the chief citizens, and his soldiers in their military dresses, and opened its gates. The new consuls took possession of their offices in this temple; whence they were said to open the year. See Macrobius Saturn. lib. i. cap. 9. and Virgil, Æn. lib. vii. v. 601, 622.

This temple was in the Roman forum, and Procopius says, that in his time the remains of it were still to be seen there over-against the capitol, with a little niche of brass, in which was his statue.

There was a second temple of Janus, built by Cn. Duilius, in the Forum Olitorium, or herb-market, after the first Carthaginian war; and this, being fallen into decay, was rebuilt by the emperor Tiberius, according to Tacitus, *Annal.* l. ii.

A third temple of Janus, called "Templum Jani Augusti," was situated in the Velabrum, a little valley, on one side of the Forum Boarium, or ox-market, between the capitol and mount Aventine. It was a square building of the Ionic order, and entirely of marble. Some say, that it was built by Numa, and repaired by Augustus; but others dispute its high antiquity. This was the temple of Janus quadrifrons, or the four-faced Janus; and owed its origin as well as its name, to the following accident, according to Servius. The Romans, he says, after the taking of Faleria in Tuscany, having met with a statue of Janus that had four faces, were desirous to have such a one at Rome; and to honour him the more, they built for him a temple with four fronts, each having twelve niches in it, with a great gate, which denoted the four seasons, and the twelve months of the year. Varro says there were also twelve altars in this temple, dedicated to Janus, each of which represented a month of the year.

JANYSUS, in *Ancient Geography*, a town of Syria, situated on the sea-coast, between Gath and the Sirbonide lakes, according to Herodotus, who adds, that it is at the distance of three days' journey from mount Casius.

JANZE', in *Geography*, a town of France, in the department of the Ille and Vilaine, and chief place of a canton, in the district of Rennes; 5 miles S. of Chateau-Girons. The place contains 3513, and the canton 12,815 inhabitants, on a territory of 172½ kilometres, in 6 communes.

JAO, a town of Japan, in the island of Nippon; 35 miles S. of Meaco.

JAOURHORISI, a town of Asiatic Turkey, in the province of Diarbekir; 65 miles W. of Nisibin.

JAP. Among Hindoo mystics great merit is ascribed to abstraction, or silent contemplation of the attributes of the deity. This is essayed by enthusiastic individuals most perseveringly; to the length, as is pretended, of complete absorption of all intellectual power, by a sort of spiritual union with the attribute or deity thus propitiated. Another species of abstract devotion is called *Tapas* (which see); but this includes also penance and austerities; whereas jap, we believe, is confined to abstraction, induced by silent and intense contemplation. To promote this, the aspirant sometimes continues with closed eyes, or with his eyes fixed on the tip of his nose. Rosaries are also used in the commencement of this species of devotion, or by those who intend only a short exercise of it. Such rosaries are called *jap-mala*.

JAPACANI, in *Ornithology*, a species of *Oriolus*; which see.

JAPAN, in *Geography*, a kingdom or empire, consisting of several islands, and situated near the eastern extremity of Asia, between the 30th and 41st degree of N. latitude, and the 131st and the 142d degree of E. longitude. The coast of Japan is, according to Kämpfer, the most dangerous in the whole world; and captain Gore found strong and rapid currents setting along the eastern coast, which he has particularly described. (See Cook's Third Voyage, vol. iii. p. 406.) This empire has been called by Marco Polo *Zipangri*, or *Zipangu*; by the inhabitants themselves, *Nippon*,

Nippon, or *Nifon*; and by the Chinese *Sippon*, and *Jepuen*. The principal islands of which it consists, omitting several of a smaller size, are, towards the S.W., *Kjusiu* (called also *Ximo*, *Saikokf*, or the western country), and *Sikokf* or *Xicogo*; N.E. of these *Nippon* or *Nippon*, the most important; and N. of *Nippon*, *Jesso*, *Jedso*, or *Chicha*. The Japanese islands probably derive their original population from the Chinese by way of Corea, though their languages are radically distinct. It appears from Kämpfer's account, that the Japanese themselves acknowledge their government and civilization to have been derived from China. This author distinguishes three epochs in their history; the fabulous, the doubtful, and the certain. The latter period commences with the hereditary succession of the ecclesiastical emperors, from the year 660 before the Christian era, and extends to the year of Christ 1585, during which 107 princes of the same lineage governed Japan. At the last period the secular princes assumed the supreme authority. The several reigns are generally pacific, though at distant intervals the Mandshurs and Coreans occasionally invaded Japan, but were always defeated by the valour of the Japanese. An attempt was made in the reign of Gouda by the Moguls, to make a grand invasion of Japan, after having conquered China about fourteen years before. But the formidable fleet, consisting, according to exaggerated report, of 4000 small vessels, which contained an army of 240,000 men, was dispersed by a furious tempest, which the Japanese devoutly ascribed to the gods, their protectors.

The religion of the Japanese is Polytheism, intermixed with an acknowledgment of a supreme creator. Their two principal sects are those of "Sinto" and of "Buddo." The first acknowledges a supreme being, far superior to the worship of man, and they therefore adore the inferior deities as mediators. They believe that the souls of the virtuous have a place assigned them immediately under heaven, while those of the wicked wander in the air till they expiate their offences. They abstain from animal food, detest bloodshed, and will not touch any dead body. Thunberg further says, that though it is unnecessary on any occasion to pray to the gods, whom they call "Sin," or "Kami," because they know all things, they have both temples and certain stated holidays. These temples consist of several apartments and galleries, with windows and doors in front, which may be taken away and replaced at pleasure, according to the custom of the country. The floors are covered with straw mats, and the roofs overhang an elevated path, in which people walk around the temples. In these temples there is no visible idol or image for representing the supreme invisible being; but they sometimes keep a little image in a box, which represents some inferior divinity to whom the temple is consecrated. In the centre of the temple is often placed a large mirror of well polished metal, designed to remind those that come to worship, that in like manner as their personal blemishes are faithfully portrayed in the mirror, so do the secret blemishes and evil qualities of their hearts lie open and exposed to the all-searching eyes of the immortal gods. The priests are either secular or monastic. Their festivals and modes of worship are cheerful and gay, for they regard the gods as beings who solely delight in dispensing happiness. The first day of the month is always kept as a holiday; so is the first day of the year: and besides these they have three or four other grand festivals. There are also several orders of monks and nuns.

The sect of "Buddo," which is the same with that of Budha, or *Boodh* (which see), was imported from Hindoostan; and passing through Chini and Corea, its tenets have been blended with foreign maxims; but the doctrine

of the metempsychosis remains; wicked souls being supposed to migrate into the bodies of animals, till they have undergone a due purgation.

The doctrine of their philosophers and moralists, called "Shuto," resembles the Epicurean, though it is blended with the tenet of Confucius, that the purest source of pleasure is a virtuous life. This sect admits a soul of the world; but does not allow infinite gods, temples, or religious forms.

Soon after this country was discovered by the Portuguese, missionaries from the Jesuits arrived in 1549, and they and their successors continued to diffuse their doctrine till 1638, when 37,000 Christians were massacred. Before this period various persecutions had occurred; and in 1590 upwards of 20,000 are said to have perished. The Christian faith has, indeed, been so perverted and disgraced by the pride and avarice of the Portuguese, and the vain ambition of the Jesuits, that since the above-mentioned memorable epoch, Christianity has been held in the greatest detestation; and the cross, with its other symbols, are annually trampled under foot; nevertheless, it is a fable that the Dutch are constrained to join in this ceremony.

As to the government of Japan, the "Kubo," or secular emperor, is now the sole monarch; but till near the close of the 17th century the "Dairis," pontiffs or spiritual monarchs, held the supreme authority. The secular prince, in concurrence with the Dairi, confers two honorary ranks, corresponding to those of our noblemen and knights. The Dairi resides at Miaco, and his court remains, though not in its former splendour. Each province is governed by a resident prince, who is responsible to the emperor for his administration. The emperor derives his chief revenue from his own estate, consisting of five inferior provinces and some detached towns. Each prince enjoys the revenues of his fief, with which he supports his court and military force, repairs the roads, and defrays every civil expence. The princes of the first dignity are styled "Daimio," and those of inferior rank "Siomio;" and they are generally hereditary. Upon the whole we may observe, that the constitution of Japan consists of an absolute hereditary monarchy, supported by a number of absolute hereditary princes; whose jealousy of each other's power conspires with domestic pledges to render them subservient to the supreme head. The laws, according to Thunberg, are few, but rigidly and impartially enforced. The code is written in large letters, and posted up in every town and village. Death is the common punishment of crimes, but sentence of death must be signed by the privy council at Jeddo. Parents and relations are answerable for the crimes of those whose moral education they ought to have superintended. The police is excellent; each town having a chief magistrate, and each street a commissary, elected by the inhabitants to guard property and tranquillity. Two inhabitants alternately patrol the streets by night to prevent fire.

The population of the Japanese empire, which is very considerable, is not easily ascertained. Its regular military force is estimated at about half a million, the infantry being 468,000, and the cavalry 58,000, and if the army be doubled, the population may be stated at a million: but it may be more exactly deduced from supposing that it is equal to that of China; and as the former country is only about one-tenth part of the size of the latter, the whole number of people will be about 30,000,000. The character of the people is singularly brave and resolute. The navy scarcely deserves notice. The Japanese vessels are open at the stern, so that they cannot bear a boisterous sea. Spanberg, however, describes two kinds of vessels, one answering to Kämpfer's, and another, which he calls buffes, and in

which, he says, they make their voyages to the neighbouring islands. As Japan consists of islands, and is destitute of a navy, it can have no external political importance; but it has little to apprehend from any neighbouring power. The revenues of the empire may be stated at 28,340,000*l.* sterling, besides the provinces and cities that are immediately subject to the emperor, who, besides these, has a considerable treasure in gold and silver, deposited in chests of 1000 taels, each being equal in value to a Dutch rix-dollar, or about 4*l.* 4*d.* English money.

The Japanese, with respect to their persons, are well made, active, easy in their motions, and having stout limbs, though less strong and athletic than the other northern inhabitants of Europe. The men are of a middling size, with yellowish complexions, though some few, especially the women, are almost white. Their narrow eyes, very much sunk in the head, and high eye-brows, resemble those of the Chinese and Tartars. The eyes incline to black, and the eye-lids form in the great angle of the eye a deep furrow, which discriminates them from other nations. Their heads are generally large, their noses, though not flat, rather thick and short; their hair black, thick, and shining in consequence of the use of oils. The mode of the men's head-dress is singular; the middle part of their heads, from the forehead very far back, is close shaven. The hair remaining round the temples and nape of the neck is turned up and tied on the top of the head into a kind of brush, which is lapped round with white thread and bent backwards. The women preserve all their hair, and, drawing it together on the top of the head, roll it round a loop, and fastening it down with pins, to which ornaments are fixed, draw out the sides till they appear like little wings, behind which they stick a curl. Physicians and priests shave the head entirely, and are thus distinguished from the rest of the people. The fashion of their clothes has undergone little alteration from remote antiquity. They consist of one or more loose gowns, tied about the middle with a sash; those of the women being much longer than the men's; in summer they are very thin, and in winter quilted with silk or cotten wadding. Persons of rank have them made of silk; and those of the lower class of cotton stuffs. Those of the women are ornamented with gold and silver flowers woven into the stuff. At the breast these gowns are open, and they have wide sleeves, which serve as pockets. Some use drawers; but their legs are naked. They wear sandals of rice-straw; in winter they have socks of linen, and in rainy or dirty weather wooden shoes. They never cover their heads except when they travel, and then use conical caps made of straw: for defending themselves against the rain or sun, they use fans or umbrellas. In their sash they fasten the sabre, fan, and tobacco-pipe. Their houses are built with upright posts, crossed and wattled with bamboo, plaited within and without, and white-washed. They are generally of two stories; the roofs are covered with large and heavy pantiles: the floors are covered with planks, on which they lay mats, filled with straw. The whole house consists of one large room, divided by wooden partitions; and their windows are frames of wood, separated into squares, filled up with thin white paper, and sufficiently transparent to answer the purpose of glass. In their rooms they have no kind of furniture; not even beds. Their custom is to lie down upon their heels on the mats, which are always soft and clean. Their victuals are served up on a low board, raised a few inches from the floor, and only one dish at a time. They have mirrors, made of a compound metal, which they use only at their toilets. In the severity of winter, they are obliged to warm their houses from November to March; but they have neither fire-places nor stoves;

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stoves; instead of these they use copper-pots standing upon legs; these are lined on the inside with loam, on which are laid ashes, and upon them lighted charcoal, so prepared as not to render its fumes dangerous. The use of tobacco, probably first introduced by the Portuguese, is very common among both sexes, both old and young; and the smoke is blown out through the nostrils. The first compliment offered to a stranger in their houses is a dish of tea and a pipe of tobacco. Their pipes have mouth-pieces and bowls of brass, or white copper. The hollow of the bowl is so small as scarcely to contain an ordinary pea; and the tobacco is cut as fine as a hair about a finger's length; and is rolled up in small balls like pills, to fit the small hollow in the bowl of the pipe. Every house has a bath, which, as the people are very cleanly, is daily used by the whole family. You seldom meet a man, who has not his distinguishing mark imprinted on the sleeves and back of his clothes, in the same colour in which the pattern is printed. Their usage of names differs from that of all other nations. The family name is never made use of, except in signing solemn contracts, and the particular names by which individuals are distinguished in conversation varies according to the age or situation of the person who makes use of it; so that in some cases, the same person, in his life-time, is known by five or six different names. They reckon their age by even years, not regarding whether they were born at the beginning or the end of a year. In general, the Japanese are a highly civilized people, displaying great diversity of character; but their virtues far outweigh their vices. Obedience to parents and respect to superiors form the characteristic of this nation. Their salutations, or mutual intercourse among equals, are distinguished by civility and politeness; and to these children are early accustomed by the example of their parents. Their pride is useful, as it prevents their stooping to the mean tricks of the maritime Chinese. Though polygamy be allowed, they acknowledge only one wife; the others being merely concubines. Marriages are conducted by the parents or relations; and domestic tranquility is insured by the wife's being under the absolute disposal of her husband, the laws allowing her no kind of claim if she incurs his displeasure. Examples of infidelity are rare. In case of separation, the wife is condemned to the ignominy of having her head always shaven. The marriage ceremony is always performed before an altar, by the bride's lighting a torch, from which the bridegroom kindles another. The bodies of the distinguished dead continue to be burned, while others are buried. Periodical visits are paid to the tombs, besides the festival of lanterns, held as in China, in honour of the departed. As to food and sauces those of the Japanese are very various. Their general drink is "Sarki," or beer made of rice, which last article supplies the place of bread. They use many kinds of vegetables and fruits. Tea is universally used; but wine and spirituous liquors are unknown. The Japanese festivals, games, and theatrical amusements, equal those of the most civilized nations. Dancing girls are common; and the introduction of boys indicates an abominable propensity here, as in China, neither reputed a crime nor a singularity.

The language of the Japanese, of which Thunberg has published a curious vocabulary, seems to have little connection with the monosyllabic speech of the Chinese. In sciences and literature the Japanese are not inferior to few of the oriental nations. In domestic economy, deemed here a science, and also in the history of his country, every person in Japan excels. Astronomy is cultivated, but to no very important and useful purpose. The art of printing is of ancient usage, but they use blocks and not moveable types, and

impress only one side of the paper. They are excellent workmen in iron and copper; and yield to none in manufactures of silk and cotton, and in the art of varnishing wood. Glass is common, and they make telescopes. The porcelain is deemed superior to that of China. Their celebrated varnish is obtained from the "rhus vernix." They have many varieties procured from the bark of a species of mulberry tree; and their woods display incomparable skill. They have many schools, in which the children are taught to read and write; and their education is accomplished without personal chastisement, while courage is instilled by the repetition of songs in praise of deceased heroes.

Although the mountains of Japan prevent the formation of canals, their roads are kept in excellent order, and the proximity of the sea renders inland navigation almost unnecessary. Their inland commerce, being free from imposts, is very considerable; and their external commerce, though confined to the Dutch and Chinese, is extensive. The harbours are crowded with large and small vessels; the high roads with various goods; and the shops are well replenished. Large fairs are held in different places, to which a great multitude of people resort. Their trade with China is the most important, and consists of raw silk, sugar, turpentine, drugs, &c. while the exports are copper in bars, lacquered ware, &c. The Dutch export copper and raw camphire, for which they give in return sugar, ripe cloves, Japan wood, ivory, tin, lead, tortoise-shell, chintzes, and a few other trifles. In their intercourse both with the Dutch and Chinese, they trade with companies of privileged merchants. As the Dutch company have not been accustomed to pay duty in Japan, either on their exports or imports, they used to send an annual present to the court, consisting of cloth, chintzes, succotas, cottons, stuffs, and trinkets. Thunberg represents the profits of the Dutch trade as very inconsiderable, so that the company employed only two ships. The Japanese coin is of a remarkable form: the gold being called "Kobango," the silver, called "Kodama," sometimes represents "Daikok," the god of riches, sitting upon two barrels of rice, with a hammer in his right hand, and a sack at his left. The "Seni" of copper or iron, are strung like the Chinese pieces of similar value.

The climate of Japan is variable. In summer the heat is violent, and if it were not moderated by sea-breezes, would be intolerable. The cold in winter is severe. The falls of rain commence at Midsummer, and to these Japan owes its fertility, and also its high state of population. Thunder is not unfrequent: tempests, hurricanes, and earthquakes, are very common. From Thunberg's thermometrical observations it appears that the greatest degree of heat at Nagasaki, was 98° in August, and the severest cold in January 35°. The face of the country presents, besides some extensive plains, more generally mountains, hills, and valleys; the coast being mostly rocky and precipitous, and invested with a turbulent sea. It is also diversified with rivers and rivulets, and many species of vegetation. The soil, though barren, is rendered productive by fertilizing showers and manure, and by the operations of agricultural industry. Agriculture, as Thunberg informs us, is here well understood, and the whole country, even to the tops of the hills, is cultivated. Free from all feudal and ecclesiastical impediments, the farmer applies himself to the culture of the soil with diligence and vigour. Here are no commons, and it is a singular circumstance, that if any portion be left uncultivated, it may be seized by a more industrious neighbour. The Japanese mode of manuring is to form a mixture of all kinds of excrements, with kitchen refuse, which is carried in pails into the field, and poured

poured with a ladle upon the plants, when they have attained the height of about six inches, so that they thus instantly receive the whole benefit. They are also very attentive to weeding. The sides of the hills are cultivated by means of stone walls, supporting broad plats sown with rice or esculent roots. Rice is the chief grain: buck-wheat, rye, barley, and wheat being little used. A kind of potatoe (*convolvulus edilis*) is abundant with several sorts of beans and peas, turnips, cabbages, &c. From the seed of a kind of cabbage lamp oil is expressed; and several plants are cultivated for dyeing; with the cotton shrubs, and mulberry trees for the food of silk-worms. The varnish and camphire trees, the vine, the cedar, the tea tree, and the bamboo reed, not only grow wild, but are planted for numerous uses.

The principal rivers of Japan are the Nogafa, Jedogawa, Ojingawa, Fufigawa, Sakgawa, Jodo or Yodo, Ujin or Ojin, Oomi, and Aska. One of the chief lakes is that of Oitz, said to be 50 Japanese leagues in length, each about an hour's journey on horseback, but of inconsiderable breadth. From it flows two rivers; and near it is the delightful mountain of Jesan, which is esteemed sacred, and is said to present not less than 3000 temples. The principal Japanese mountain is that of Fusi, covered with snow almost throughout the year. The Fakonie are in the same quarter, surrounding a small lake of the same name. Many of the mountains are covered with wood. There are several volcanoes; and they generally abound with evergreen trees, and crystalline springs. Near Firando there is a volcanic island; and in the province of Figo there is a volcano, which constantly emits flames, and another, which was formerly a coal-mine, in the province of Tfikuser.

In the whole empire of Japan there are neither sheep nor goats; and, in general, there are but few quadrupeds. The food of the Japanese consists almost entirely of fish and fowl, with vegetables. Some few dogs are kept from motives of superstition; and cats are favourites of the ladies. Hens and common ducks are domesticated for the sake of their eggs. The mineralogy of Japan has been particularly stated by Thunberg: from whom we learn, that gold and silver are to be found in abundance; copper is also quite common: but iron is scarcer than any other metal in this country. Of that which is found they manufacture scymitars, arms, sciffors, knives, and other necessary implements. Amber, brimstone, pit-coal, agate, asbestos, porcelain clay, flesh-coloured steatite, pumice, and white marble are enumerated among the productions of Japan. Many small isles are dependents on this empire, particularly in the S. and E.; among which is Fatfiso, the place of exile for the grandees. For other particulars we refer to Kämpfer, Thunberg, Phil. Transf. vol. lxx. and Pinkerton's Geography, vol. ii.

JAPAN Earth. (See **CATECHU.**) The extract prepared in the manner, stated under that article, is much used by the natives of Hindoostan in dyeing and painting chintz and other cloths: combined with the vitriolic salts, a black colour is produced: mixed with oil they paint the beams and walls of houses to preserve them, and to defend them from the destructive white ants; and it is sometimes mixed with their wall-plaster. The extract is used only medicinally as a cooling medicine, and when too profusely used, it is said to be a destroyer of venereal pleasures. It is also given at the rate of two ounces a day to tame vicious horses. This extract is likewise a principal ingredient in one of their ointments, of great repute, composed of blue vitriol, four drams; Japan earth, four ounces; alum, nine drams; white resin, four ounces; which are reduced to a fine powder, and

mixed with the hand, adding of olive oil ten ounces, and water sufficient to bring the mass to the proper consistence of an ointment: this ointment is used in every sore from a fresh wound to a venereal ulcer. Med. Obs. and Inq. vol. v. art. 16. The antiseptic quality of catechu appears from the experiments of sir John Pringle.

The London college formerly directed Japan earth to be made into troches by beating it with an equal weight of gum arabic, and four times the weight of both, of sugar of roses, and a sufficient quantity of water: but the college of Edinburgh ordered one part of the Japan earth, four of gum tragacanth, and twenty-four of fine sugar, with rose-water. The *tinctura Japonica*, or *tinctura Catechu*, is prepared by digesting, for fourteen days, three ounces of the extract of catechu, and two of cinnamon bark bruised, in a quart of proof spirit; and this tincture may be given in doses of two or three spoonfuls. The infusion of catechu is prepared by macerating for an hour in a covered vessel $2\frac{1}{2}$ drams of the extract, half a dram of bruised cinnamon bark, in half a pint of boiling water. This is one of the best forms in which catechu can be exhibited, as it is thus at once freed from its impurities, and improved by the addition of the aromatic. For the method of preparing Japonic confection, see **CONFECTION.** Japan earth dissolved in water is of a full brown colour, a little inclined to red. It is sometimes used in water-painting, where it has a good effect; but its gummy texture renders its use improper in oil.

JAPANNERS GILDING. See **GILDING.**

JAPANNING, the art of varnishing, and drawing figures on wood, &c. after the same manner as the workmen do who are natives of Japan.

The varnish made and used in China and Japan is composed of turpentine, and a curious sort of oil they have: This they mix and boil up to a proper consistence, and this never causes any swelling in the hands or face of the people who use it. The swellings in these parts, which often happen to those who work the lacquered ware, and sometimes to those who only pass by the shops of these people, is from the lack, and not the varnish. This lack is the sap or juice of a tree, which runs slowly out on cutting the lower part of the trunk of the tree, and is received in pots set on purpose under the incisions. The juice, as it flows from the tree, is of the colour and consistence of cream; and as it comes in contact with the external air, its surface becomes black. As they only use it when black, their method of preparing it is to set it out in the open air, in large flat bowls, in which it looks all surface; but that the whole may be of the same uniform colour, they continually stir it for twenty-four hours together, with a smooth piece of iron. By this means the whole becomes thicker than it was before, and of a fine deep black. When it is in this state, they powder some burnt boughs of trees, and mix them thoroughly with it; and then spreading it thin over any board which they intend to japan, it is soon dried in the sun, and is then absolutely harder than the board it is laid on. When this is thoroughly dry, they polish it over with a smooth stone and water, till it is as smooth as glass; and then wiping it very dry, they lay on the varnish, made of oil and turpentine, and boiled to a proper consistence for this kind of work.

If the work is to be of any other colour than black, that colour is to be mixed with the varnish, and then the whole spread on very thinly and evenly; for on this laying it on depends the principal art of varnishing. When there are to be figures in gold and silver, these must be traced out with a pencil in the varnish over the rest of the work; and when this varnish is almost dry, the leaf-gold or leaf-silver is

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to be laid on, and polished afterwards with any smooth substance.

The substances which admit of being japanned are almost those of every kind that are dry, and not too flexible; as wood, metals, leather, and paper prepared. Wood and metals require no other preparation, except that of cleaning their surfaces, and rendering them perfectly even. But leather should be securely strained either on frames or on boards; and paper should be treated in the same manner, and have a previous strong coat of some kind of size; but it is rarely made the subject of japanning, till it is converted into *papier maché*, or wrought, by other means, into an inflexible form. One principal variation in the manner of japanning is the using or omitting any priming or under-coat on the work to be japanned. In the older practice, such priming was always used; and is at present retained in the French manner of japanning coaches and snuff-boxes of the *papier maché*. But in the Birmingham manufacture it has always been rejected. The advantages attending the use of such priming are, that it makes a saving in the quantity of varnish necessary to be used, and that it helps to form, by means of rubbing and water-polishing, an even surface for the varnish. However, when an under-coat of size is used, the japan coats of varnish and colour will be always liable to crack and peel off, and are less durable than those which are formed without such priming. This difference is observable in comparing the wear of the Paris and Birmingham snuff-boxes.

The laying in of the colours in varnish or oil instead of gum-water, is another variation from the method of japanning formerly practised. But if the colours are tempered with the strongest isinglass size and honey, instead of gum-water, and laid on very flat and even, the work will not be much inferior in appearance to that done by the other method, and will last as long as the common old japan work, the best kinds of the true japan excepted. The proper japan grounds are either such as are formed by the varnish and colour, where the whole is to remain of one simple colour; or by the varnish, either coloured, or without colour, on which some painting, or other decoration, is afterwards to be laid. The priming, or under-coat, which is sometimes used in japanning, is of the same nature with that called clear-coating, practised by the house-painters; and consists in laying on and drying in the most even manner a composition of size and whiting. The common size, (see *SIZE*,) has been generally used; but in nicer works, the glowers or the parchment size, improved by adding a third of isinglass, will be preferable. The work should be prepared for this priming, by being well smoothed with fish-skin, or the glass-shaver; and by being brushed over once or twice with hot size diluted, when it is of the common strength, with two-thirds of water. The priming, formed of a size whose consistence is between that of the common kind and glue, mixed with as much whiting as will give it a sufficient body of colour to hide the surface on which it is laid, should be laid on evenly with a brush. Two coats of this priming will generally be sufficient; but if, upon trial with a fine wet rag, it will not receive a proper water-polish, another coat or more must be given it. And after the last coat but one is dry, the work should be smoothed by rubbing it with the Dutch rushes. When the last coat is dry, the water-polish should be given, by passing over every part of it with a fine rag, a little moistened, till the whole appears perfectly plain and even. The work is then ready to receive the painting or coloured varnish.

When wood or leather is to be japanned, without priming, it may be prepared by laying on two or three coats of coarse

varnish, made by dissolving two ounces of seed-lac, and as much rosin, in one pint of rectified spirit of wine: and then the proper japan-ground must be laid on. As metals never require to be under-coated with whiting, they must generally be treated in the same manner as wood or leather.

For white japan grounds.—Prepare a white varnish, by working and grinding flake white, or white lead, with a sixth part of its weight of starch, and drying the mixture; then temper it into a consistence fit for spreading with mastic varnish, (see *VARNISH*,) or compound it with gum anime; lay this on the body to be japanned, previously prepared with or without the under-coat of whiting: and varnish it over with five or six coats of the following varnish, formed by dissolving two ounces of the clearest and whitest grains of seed-lac, and three ounces of gum anime, pulverized, in about a quart of spirit of wine, and straining off the clear varnish.

A very good varnish, free from brittleness, may be obtained by dissolving as much gum anime as the oil will take in old nut or poppy oil, boiled gently when the gum is put into it. The ground of white colour may be laid on in this varnish, and then a coat or two of it may be put over the ground; but it must be well diluted with oil of turpentine when it is used.

Blue japan grounds may be formed of bright Prussian blue; or of verditer glazed over with Prussian blue, or smalt. The colour may be best mixed with shell-lac varnish, and brought to a polishing state by five or six coats of varnish of seed-lac. But when a bright blue is required, and a less degree of hardness can be dispensed with, the method before directed, in the case of white grounds, must be pursued.

Red japan grounds.—For a scarlet ground, vermilion may be used: but this is less beautiful than the crimson produced by glazing it over with carmine or fine lake, or rose-pink. For a very bright crimson; instead of glazing with carmine, the Indian lake, called safflower, should be used, dissolved in the spirit of which the varnish is compounded. But in this case, instead of glazing with the shell-lac varnish, the upper or polishing coats need only be used; which will render this a cheaper method than the using of carmine. If the highest degree of brightness be required, the white varnishes must be used.

Yellow japan grounds.—For bright yellow grounds, king's yellow, or turpeth mineral should be used, either by themselves, or mixed with fine Dutch pink. The effect may be still more heightened by dissolving powdered turmeric root in the spirit of wine, of which the upper or polishing coat is made; which spirit of wine must be strained off from the dregs, before the seed-lac be added to it for forming the varnish.

Yellow grounds may likewise be formed of the Dutch pink only.

Green japan grounds may be produced by mixing king's yellow and bright Prussian blue; or turpeth mineral and Prussian blue. A cheap, but fouler kind may be had from verdigris with a little of the fore-mentioned yellows, or Dutch pink. But if a very bright green be wanted, the crystals of verdigris, called distilled verdigris, should be used, and their effect will be heightened by laying them on a ground of leaf-gold. Any of these may be used with good seed-lac varnish, but will be brighter with the white varnish.

Orange-coloured japan grounds may be formed by mixing vermilion or red lead with king's yellow, or Dutch pink: or orange lake, or red orpiment will make a brighter orange ground than can be produced by any mixture.

Purple japan grounds may be produced by the mixture of

lake and Prussian blue; or a fouler kind, by vermilion and Prussian blue.

Black japan grounds may be formed, without heat, by either ivory-black, or lamp-black, which may be laid on with the shell-lac varnish: and the upper or polishing coat may be common feed-lac varnish.

For forming the common *black japan grounds* on iron or copper by means of heat, the work must be first painted over with drying oil, and a little lamp black; and when it is moderately dry, put into a stove of such a degree of heat, as will change the oil black, without burning it. The heat should be slowly augmented and continued for a long time, in order to harden the coat of japan. This kind of varnish requires no polish.

Tortoise-shell japan grounds.—The best is made by means of the following varnish; prepared by boiling together one gallon of good linseed oil and half a pound of umbre, till the oil becomes very brown and thick; by straining the mixture through a coarse cloth, and setting it again to boil, till it acquires the consistence of pitch. On the piece of work to be japanned, well-cleaned, let vermilion, tempered with shell-lac varnish, or with drying oil diluted with oil of turpentine, be laid thinly on the places designed to imitate the more transparent parts of the tortoise-shell.

When the vermilion is dry, brush over the whole with the black varnish, tempered to a due consistence with oil of turpentine; and when it is set and firm, put the work into a stove, where it may undergo a very strong heat, and be continued for a considerable time. This method, proposed in one of Kunkel's recipes, has been revived in the Birmingham manufactures, where it is pursued in forming the ground of snuff-boxes, dressing boxes, tea-waiters, &c. This ground may be decorated with painting and gilding in the same manner as any other varnished surface.

Japan-work ought properly to be painted with colours in varnish. (See *PAINTING in Varnish* and *VARNISH*.) The colours are now most frequently tempered in oil, having a fourth part of its weight of gum anime previously dissolved in it. This oil should be well diluted with spirit of turpentine when it is used, that the colours may be laid more evenly and thin, and thus fewer of the polishing coats of varnish will be necessary. When water-colours are laid on grounds of gold, so as to have the effect of embossed work, they are best prepared by means of isinglass size corrected with honey or sugar-candy. The body of which the embossed work is raised may be formed of a very strong gum-water, thickened to a proper consistence by bole armeniac and whiting, in equal parts, which being laid on in the proper figure, and repaired when dry, may be then painted with the proper colours tempered in the isinglass size, or in the general way with shell-lac varnish.

The finishing part of japanning consists of laying on and polishing the outer coats of varnish. This is in general best done with common feed-lac varnish. (See *VARNISH*.) But where brightness is principally regarded, the feed-lac must give way to the whiter gums. When hardness, tenacity, and brightness are desired, the mixed varnish made of the picked feed-lac, already proposed under *white Japan grounds*, should be adopted. The pieces of work to be varnished should be placed near a fire, and made perfectly dry; the varnish should then be rubbed over them with proper brushes; first one coat, and when this is dry another should be laid over it; and this operation must be continued at least five or six times. When a sufficient number of coats is thus laid on, the work is fit to be polished, which must be done, in common cases, by rubbing it with a rag dipped in tripoli, commonly called rotten-stone, finely powdered;

but toward the end of the rubbing, a little oil of any kind should be used with the powder: and when the work appears sufficiently bright and glossy, the oil alone should be used to clear it from the powder, and to give it a brighter lustre. For white grounds, fine putty or whiting should be used instead of the tripoli. For gilding of Japan work, see *Japanners GILDING*. Handmaid to the Arts, vol. ii. p. 497, &c.

JAPARA, in *Geography*, a sea-port town of the island of Java, situated on a peninsula on the N. coast; the harbour is formed by a river of the same name, and is capable of receiving a great number of ships. The Dutch have a resident here for the purchase of timber, cotton, rice, and indigo. About four miles S. from this town is the ancient city of Japara, once the capital of a kingdom. Not far from this is an old and ruinous Moorish temple of stone, with beautiful sculpture of imagery and foliage: this temple is more than 300 years old. S. lat. 6° 28'. E. long. 110° 54'.

JAPENE, a town of Africa, in the kingdom of Jagra.

JAPHA, in *Ancient Geography*, a city of Galilee, near Jotapata, according to Josephus; probably the same with Japhia (Joh. xix. 12.) belonging to the tribe of Zebulun. It was strongly fortified; and was besieged and taken by Trajan, the father of the emperor of this name, who massacred all the inhabitants who were capable of bearing arms, and made slaves of the women and children, A.D. 67. See *JOPPA*.

JAPHETH, in *Scripture Biography*, the eldest son of Noah, who was born in the 500th year of this patriarch, and who had seven sons, viz. Gomer, Magog, Madai, Javan, Tubal, Meshech, and Tiras, who "peopled the isles of the Gentiles, and settled in different countries, each according to his language, family, and people." (Gen. x. 5.) By the "isles of the Gentiles," the Hebrews understood the isles of the Mediterranean, and other countries whither they could go by sea only, as Spain, Gaul, Italy, Greece, and Asia Minor; and with respect to these seven sons of Japheth it is very generally supposed that Gomer was the father of the Cimbri, or Cimmerians; Magog of the Scythians; Madai of the Macedonians or Medes; Javan of the Ionians and Greeks; Tubal of the Tiburensians; Meshech of the Muscovites or Ruffians; and Tiras of the Thracians. From the LXX, Eusebius, the Alexandrian Chronicle, and Austin, we learn that Japheth had an eighth son called Eliza.

The portion of Japheth was Europe and part of Asia, whose descendants possessed all Europe, all the islands in the Mediterranean, the whole of Asia Minor, and the northern parts of Asia. Noah, in his benediction of Japheth, prophesies concerning him (Gen. ix. 27.), "God shall enlarge Japheth; and he shall dwell in the tents of Shem; and Canaan shall be his servant." This prediction was accomplished when the Greeks and Romans, who were descendants of Japheth, not only subdued Syria and Palestine, but also pursued and conquered such of the Canaanites as were any where remaining, as, e. g. the Tyrians and Carthaginians, the former of whom were received by Alexander and the Grecians, and the latter by Scipio and the Romans. In the original of the prediction, "God shall enlarge Japheth," there is a manifest allusion to his name, which signifies enlargement. This was fulfilled both with regard to the territory and children of Japheth. The territories of Japheth's posterity were very large; for besides all Europe, extensive as it is, they possessed the Lesser Asia, Media, part of Armenia, Iberia, Albania, and those vast regions towards the north, which anciently the Scythians inhabited, and which now the Tartars inhabit; and it is not improbable that the

new world was peopled by some of his northern descendants passing thither by the straits of Anian. The enlargement of Japheth also denoted a numerous progeny, as well as ample territory; for Japheth, as we have observed, had seven sons, whereas Ham had only four, and Shem only five.

In profane authors Japheth is known under the name of "Japetus," who is made by the poets father of heaven and earth; whose habitation was in Thessaly, where he became celebrated for his power and violence. Japetus married a nymph named Alia, by whom he had four sons, Hesperus, Atlas, Epimetheus, and Prometheus, who were all very famous among the ancients. Neptune is also, among ancient mythologists, a memorial of Japheth. As Noah divided the earth between Shem, Ham, and Japheth, Saturn divided the world between his three sons, Jupiter, Pluto, and Neptune.

JAPONIC CONFECTION. See CONFECTION.

JAPU, in *Ornithology*, the name of a Brazilian bird, of the woodpecker kind, called also *jupujuba*. See *ORIOBUS persicus*.

JAQUARIPE, in *Geography*, a river of Brazil, which runs into the Atlantic, S. lat. 4°.

JAQUE-LAHOU, a town of Africa, on the Ivory coast; 20 miles E. of cape Lahou.—Also, a river of Africa, which runs into the Atlantic, N. lat. 5° 20'. W. long. 5° 5'.

JAQUEJAG, a town of Africa, on the Ivory coast; 43 miles E. of cape Lahou.

JAQUEMEL, a town of Hispaniola, on the S. coast, in a bay to which it gives name. N. lat. 18° 17'.

JAQUEMEL, *Cape*, a cape on the S. coast of the island of Hispaniola. N. lat. 18° 14'. W. long. 73° 25'.

JAQUES, CAPE, a cape on the coast of Chiampa, at the mouth of the river Cambodia. N. lat. 10° 40'. E. long. 107° 30'.

JAQUES, or *Jask, Cape*, a cape at the western extremity of the gulf of Persia, at its entrance from the Arabian sea. This is known by a remarkable square rock, a few miles N. of it. It is a low sandy desert, with a few shrubs on it; and it is called by Le Brun cape St. James. N. lat. 25° 39'. E. long. 57° 20'.

JAQUES, *St.*, a town of Mexico, in the province of Vera Paz.

JAQUESY, a town on the N. coast of Hispaniola; 13 miles E.S.E. of cape François.

JAQUET, CAPE, a cape on the coast of Guzerat, in the gulf of Cutch. N. lat. 23°. E. long. 69'.

JAR, or JARR, from the Spanish, *jarra*, or *jarro*, which signify the same, an earthen pot or pitcher, with a big belly, and two handles.

JAR is used for a sort of measure, or fixed quantity of divers things.—The jar of oil is from 18 to 26 gallons: the jar of green-ginger is about 100 pounds weight, of wheat 52 pounds.

JAR, a measure of Lucca oil is 25 wine-gallons = 5775 cubic inches = 3.3420 cubic feet = .12378 cubic yards = 11.62456 cubic links.

JAR, or *Jiar*, in *Chronology*, one of the Hebrew months, answering to our April. It was the eighth month of the civil year, and the second of the sacred, and had only 29 days. On the 23d day of this month the Jews kept a festival in memory of the purification of the temple by Judas Macabæus. (2 Mac. xiii. 51.) On the 25th they mourn the death of Samuel.

JAR. *To jar* is a verb which implies to disagree, to sound harshly and untunably.

JAR, for measuring musical intervals by water. See *HYPPASUS*.

JARA, in *Geography*, a town of Syria, in the pachalic of Damascus; 15 miles E. of Safet.—Also, a town of Sweden, in the province of Smaland; 10 miles S.W. of Jonkioping.

JARAMEY, an inland town of Africa, in the kingdom of Yani.

JARAMOTH. See *RAMOTH*.

JARANI, a town of Dalmatia; 10 miles S.E. of Macarfa.

JARARA-COAYPITINGA, in *Zoology*, the name of a species of serpent found in America, not much unlike the common viper, and equally venomous. Its tail is of a paler colour than the rest of the body, and thence it has its name; which, in the language of the natives, expresses this property.

JARARA-EPEBA, the name of a species of American serpent, of a brown colour, but variegated by a very beautiful undulated red line, running all along the back like a chain. Ray.

JARARACA, the name of a species of serpent, common in America. It is a very short serpent, seldom exceeding a foot and a half in length. It has some prominent veins on its head, and is of a dusky brownish colour, variegated with red and black spots. It is a very poisonous species. The natives use for a remedy the root of a plant called caatia, and by the Portuguese herva de cobros. Ray.

De Laet has described four different species of this serpent.

JARARACUCU, the name of an American species of serpent. It is of the viviparous kind, and produces a great number of young; thirteen having been found perfectly formed in the body of a female of this kind; it grows to between two and three feet long, and has, like the other poisonous serpents, very large and long teeth, which are hid in the gums, and contain a yellow poisonous liquor. These it only exerts at the time of biting, and its poison is so fatal that it will destroy a man within four and twenty hours. Ray.

JARBARRY, in *Geography*, a town of Hindoostan, in Bengal; 20 miles N. of Dinagepour. N. lat. 25° 58'. E. long. 88° 40'.

JARBO, a town of Sweden, in West Gothland; 25 miles N. of Uddevalla.

JARBOAS, a town of Sweden, in Westmanland; 45 miles W.N.W. of Stroemsholm.

JARCHI, SOLOMON BEN, in *Biography*, a famous rabbi, was born at Troyes, in Champagne, in the year 1104. He is known in history by the surnames of Ifaaki, Ifarchi, and Rafchi, and was the son of a rich merchant and learned rabbi, named Ifaac, who was also at the head of a college founded at Troyes for the instruction of the Jews, in the languages, medicine, and theology. Solomon had the best education that could be given him, and when he had finished his studies he went on his travels for farther improvement. On his return, and when he had attained to his thirtieth year, he formed a plan, under the direction of his father, of writing a history of the Jews, from the period of the destruction of Jerusalem. With this view he left his native city in 1133, and spent seven years in travelling through Italy, Egypt, Greece, Asia Minor, Palestine, Armenia, and Persia, to collect materials among the Jews themselves, who had been dispersed in all parts of the globe. In Egypt he met with the celebrated Maimonides, who advised him to relinquish the undertaking, and to leave the execution of it to more favourable times. On his return to Troyes, finding that his father was dead, and, perhaps, aware of the difficulties

which he had to contend with, he followed the counsel of Maimonides, locked up his collections, and applied himself to give an illustration and commentary on the collections of Talmudical traditions. This work being received with great applause, he next published "Glosses on the Jerusalem and Babylonish Talmuds;" and finally he wrote moral illustrations of the bible, which were printed in the great bibles of Venice and Basil, and were inserted in De Lyra's great work on the sacred volume. Jarchi died at Troyes in 1180, in the 76th year of his age. He was buried with every mark of respect in the Jewish cemetery near that city, and when that nation was afterwards driven out of France, they carried his remains with them into Bohemia, and interred them at the Prague. He is mentioned by Reland as one of the best interpreters of scripture, who says, that when any difficulties occurred to him in the Hebrew text, the illustrations of rabbi Jarchi appeared more satisfactory to him than those of the greatest critic, or any other commentator. Moveri. Bayle.

JARDES, or **JARDONS**, in the *Manege*, are callous and hard swellings in the hinder legs of a horse, seated on the outside of the hough, as the spavin is on the inside. Jardons lame a horse, unless you give the fire dexterously and betimes.

JARDIN, **KAREL DU**, in *Biography*, an agreeable painter of scenes in common life, in a style partaking of Berchem's and Wouverman's manners united. He was born at Amsterdam in 1640, and was a disciple of N. Berchem; but finished his studies in Italy, where he spent the greater part of his life, and died at Venice in 1678.

The compositions of this master are simple. A few figures with a horse or cattle, and a small landscape back-ground, generally comprise the whole; and they are most usually on a small scale. His colour is rich and bright; and frequently very agreeable; expressing happily the glow and effect of sun-shine; or the duller light of a lowering day. The defect of his works is somewhat of hardness in the touch, which, however, is very delicate and neat; and has great spirit and brilliancy.

JARDINES, **Los**, in *Geography*, small islands and rocks near the south coast of Cuba. N. lat. 21° 18'. W. long. 81° 50'.

JARDINS, **MARY CATHERINE DES**, in *Biography*, a celebrated novel writer, was born at Alençon in 1640. An early adventure in gallantry having obliged her to quit her native town, she went to Paris in her twentieth year, where she soon became known as a dramatic writer and novelist. She also attracted the notice and engaged the affection of captain Villedieu, who was already married, but from whom she took the name of madame de Villedieu, by which she has been chiefly known. The sudden death of a friend inspired her with pious sentiments, which caused her to retreat to a convent; but when it was known that her conduct had not been of the most correct kind she was dismissed. On her return to the world she became acquainted with the marquis de la Chaffe, and married him. She died in 1683. Her works were printed in a collective form, in twelve volumes, in the year 1702. They contain a number of novels, or short romances, which were much read, and contributed to set aside the long serious romances at that time in fashion. She is one of those writers who, by ascribing fictitious adventures to known characters of antiquity, have so much contributed to confound truth and falsehood. Bayle.

JARECA, or **YARECA**, in *Geography*, a town of Syria, in the Desert; 18 miles N.N.E. of Palmyra.

JARFSO, a town of Sweden, in Helingland; 36 miles N.W. of Soderhamn.

JARGEAU, a town of France, in the department of the Loiret, and chief place of a canton, in the district of Orleans, situated on the Loire; 9 miles S.E. of Orleans. The place contains 2441, and the canton 7724 inhabitants, on a territory of 150 kilometres, in 10 communes.

JARGEPOUR, a town of Hindoostan, in the circar of Cuttack; 35 miles N.E. of Cuttack.

JARGON, in *Mineralogy*. See **ZINCON** and **GEMS**.

JARGONG, in *Geography*, a town of Hindoostan, in Bengal; 18 miles S.W. of Midnapour.

JARGROD, a town of Poland, in the palatinate of Braclaw; 36 miles S.S.W. of Braclaw.

JARHISAR, a town of Asiatic Turkey, in Natolia; 40 miles N.W. of Kiutaja. N. lat. 39° 43'. E. long. 30° 3'.

JARJARIA, a town of the Arabian Irak, on the Tigris; 60 miles S.S.E. of Bagdad.

JARIBOLUS, *Ἰαριβόλος*, in *Antiquity*, one of the Palmyrenian gods. This deity, in all appearance, had the same attributes with the God Lunus; for *Jari* signifies the month over which the moon presides. Mem. Acad. Inscript. tom. iii. p. 177.

JARISZOW, in *Geography*, a town of Poland, in the palatinate of Braclaw; 56 miles S.W. of Braclaw.

JAR-KEVI, a town of Asiatic Turkey, in Natolia; 30 miles S.W. of Augura.

JARLSBERG, a town of Norway, capital of a district, abounding in mines, in the diocese of Aggerhuus; 5 miles N. of Tonsberg.

JARMAN, a town of Africa, in Sahara. N. lat. 18° 57'. E. long. 6° 26'.

JARNA, a town of Sweden, in Dalecarlia; 35 miles W.S.W. of Fahlun.

JARNAC-CHARENTE, a town of France, in the department of the Charente, and chief place of a canton, in the district of Cognac, situated on the Charente; 6 miles E. of Cognac. The place contains 1725, and the canton 10,420 inhabitants, on a territory of 162½ kilometres, in 14 communes.

JARNAGES, a town of France, in the department of the Creuse, and chief place of a canton, in the district of Bouffac; 16 miles S. of Bouffac. The place contains 727, and the canton 6118 inhabitants, on a territory of 207½ kilometres, in 12 communes.

JARNOWICH, or **GIORNOVICHI**, in *Biography*, one of the most agreeable performers on the violin of the present age, or perhaps of any age. He delighted, if not astonished more, the oftener he was heard. No one had more facility of execution, or executed with more grace the greatest difficulties. He composed concertos, which, without appearing learned, or dividing the attention by the contrivance of the inward parts, cherish the melody of the principal violin, and give a relief to the most rapid as well as the most pathetic periods of the cantilena. But such was the brilliancy of his bow, that he always seemed playing with his part. His slow movements never border on psalmodia, but have always a "unity of melody" of the most interesting and engaging kind, so complete in taste and variety, as to stand in no need of graces or embellishments to make it palatable. In his manner of playing, in the carriage of himself and his instrument, there was a something for which we have no elegant word; an ignorant and vulgar critic would perhaps call it a *flang*. If this performer, while in England, had been less capricious, and of a temper more practicable, he might have governed the musical world as Giardini had done before, and been a much richer man than caprice and extravagance

gance would ever allow him to be. Though the French, with their usual ingenuity of disguising names, call him Jarnowich, he wrote Giornovich, being by birth a Sicilian.

This admirable performer, after quitting England, resided a considerable time at Hamburgh, where he was no less remarkable for his performances on the violin, than as a sword's-man, a dancer, a billiard-player, and for feats of activity of all kinds. When in England, at the same time as the accomplished creole, St. George, he was a match for him with the foils, and more than a match for the fencing-masters. And being a man of a difficult commerce, and very sensible of his superiority in the use of arms, he was often captious and insolent in society, and wished for nothing more than opportunities of manifesting his talents. He had fought several duels in France and Russia before his arrival in England; and after quitting our island, he was wounded in the arm at Hamburgh, in an affair of honour, so severely, that it was thought both his bow-hand and sword-arm were so disabled, as never more to allow him either to fiddle or fight. And some years elapsed before he was again heard of as a musician. During which tranquil period he seems to have subsisted as a gambler, being dextrous at all kinds of games. But in 1804, going again to Russia, accounts came to this country that he died at a billiard table at Petersburg, the latter end of that year.

Though Jarnowich's taste, fancy, and performance on the violin were so excellent, as a composer, he seems to have been self-taught, and not a regular bred contrapuntist. It has been said, that in his early youth he had been an apprentice to a rope-dancer and tumbler; which will account for his extraordinary agility, feats of activity, and dancing talents. He danced a hornpipe, not only better than any of our sailors, but as well as Nancy Dawson, or Slingsby. The rest of his history is but little known. He arrived, at an early period of his life, at Paris, and delighted and astonished all hearers. In 1780 he had quitted that capital to visit other countries. M. Laborde, in his "Essais sur la Musique," tom. iii. published that year, gives him a great and just character for his captivating performance on the violin; but seems to over-rate his concertos, when he says they were as learned as agreeable.

JARNSKOG, in *Geography*, a town of Sweden, in W. r. neland; 38 miles N.W. of Carlstadt.

JARNUS, a town of Egypt; 13 miles N. of Abu-Girgé.

JAROCZOW, a town of the duchy of Warsaw; 20 miles W.N.W. of Kalish.

JAROMIRZ, a town of Bohemia, in the circle of Konigingratz; nine miles N. of Konigingratz.

JARON, or JARRON, a town of Persia, in the province of Farlitan; on the road from Ispahan to Gamron. The houses are constructed of earth, and the mosques are mean. In the town and gardens are many palm-trees, highly esteemed by the Persians for their beauty and fruit, and furnishing a profitable article of trade; 80 miles S. of Schiras. N. lat. $28^{\circ} 35'$. E. long. $52^{\circ} 42'$.

JAROS, a small island of the Mediterranean, near the coast of France. N. lat. $43^{\circ} 12'$. E. long. $6^{\circ} 25'$.

JAROSLAVL, a city of Russia, and capital of a government, deriving its name from it: it is large, well built, and commercial, situated on the Volga; containing eighty churches, three convents, above 6000 houses of wood, and more than 20,000 inhabitants. It abounds with manufactures of Russia leather, in which 6000 artisans are employed; first established by Czar Peter I., and rendered very flourishing by Ernest John, duke of Courland, during

his exile in this place; 144 miles N.N.E. of Moscow. N. lat. $37^{\circ} 35'$. E. long. $30^{\circ} 14'$.

JAROSLAVSKOI, a government of Russia, bounded on the E. by the government of Kostrom, on the N. by those of Vologda and Novgorod, on the W. by Tverskoi, and on the S. by Vladimir; about 160 miles in length, and from 30 to 110 in breadth. The capital is Jaroslavl.

JAROSLAW, a town of Austrian Poland, in Galicia; 48 miles W.N.W. of Lemberg.

JAROSOT, a town of Poland, in the palatinate of Kiev; 36 miles W. of Bialacerkiev.

JAROTSIN, a town of the duchy of Warsaw; 14 miles W.N.W. of Kalish.

JAROU-SANPOO, a branch of the Sanpoo, or Burham-pooter river, which rises in Thibet; 30 miles E. of Darmadijira.

JARPOUR, a town of Hindoostan, in Baglana; 24 miles E. of Bahbelgong.

JARRA, a town of Africa, in the Moorish kingdom of Ludamar; the town is extensive, the houses are built of clay and stone intermixed, the clay answering the purpose of mortar; the majority of the inhabitants is composed of Negroes, from the borders of the southern states, who prefer a precarious protection under the Moors, which they purchase by a tribute, to continuing exposed to their predatory hostilities. The tribute they pay is considerable; and though they manifest towards their Moorish superiors the most unlimited submission and obedience, they are treated by them with the utmost indignity and contempt. N. lat. $15^{\circ} 5'$. W. long. $7^{\circ} 13'$.

JARRAH, a town of Hindoostan, in Oude; 14 miles S. of Allahabad.—Also, a town of Hindoostan, in the circle of Chandail; 30 miles W. of Saipour.

JARRETIER, in the *Manege*, an obsolete French word, signifying a horse whose houghs are too close together; which is now expressed in French by *crochu*, i. e. crooked or hooked.

JARRIE, LA, in *Geography*, a town of France, in the department of the Lower Charente, and chief place of a canton, in the district of La Rochelle; six miles S.E. of La Rochelle. The place contains 1163, and the canton 9729 inhabitants, on a territory of $157\frac{1}{2}$ kilometres, in 14 communes.

JARS, GABRIEL, in *Biography*, was born at Lyons in 1732. His father was concerned in the mines of the Lyonnais, and as the son discovered an early attachment to the art of metallurgy, he was placed in the establishment for the construction of bridges and causeways, in order to obtain a practical knowledge of the business of a miner and civil engineer. He was soon fixed on as a fit person for introducing improvements into the art of working mines in France, and with this view he visited and strictly scrutinized most of the mines on the continent, and those in Scotland and England. On his return he set about arranging the observations which he had been able to make, when a sudden death in 1769 broke off his designs. His works were published by his brother at Lyons, entitled "Voyages Metallurgiques, ou Recherches et Observations sur les Mines et Forges de Fer, la Fabrication de l'Acier, celle du Fer-blanc, et plusieurs Mines de Charbon de Terre, &c." in three vols. 4to. They are said to form a complete collection of theoretical and practical metallurgy down to the time in which the observations were made. Gen. Biog.

JARUS, in *Botany*, a name by which some authors have called the *arum*, or *wake-robin*.

JASAD, in *Geography*, a town of Persia, in the province of Segeltan; 50 miles S. of Zareng.

JASENITZ,

JASENITZ, a town of Pomerania, on the W. side of the Oder, near its mouth; 10 miles N. of Stettin.

JASIDÆANS, in the *History of Religion*. See JEZIDES.

JASINE, in *Botany*, a name used by the ancients to express a small kind of climbing plant, much resembling that from which they obtained the drug called *scammony*. They, therefore, called this sometimes the small *scammony*, or *scammonia parva*. It climbed upon trees, and had small ivy-like leaves. Pliny has described such a plant as this under the name of *langini*; and it seems very probable that this was only a corruption of the word *jafine*, that author having taken most of his accounts from the Greeks, and having frequently mistaken their names.

JASINGPOUR, in *Geography*, a town of Hindoostan, in Oude; 30 miles S. of Fyzabad.

JASIONE, in *Botany*, *ιαζιον*, the ancient Greek name of some wild pot-herb, according to the lexicographers, with which the genus in question has but little connection.—Linn. Gen. 455. Schreb. 596. Willd. Sp. Pl. v. 1. 888. Mart. Mill. Dict. v. 2. Sm. Fl. Brit. 241. Ait. Hort. Kew. ed. 2. v. 1. 343. Juss. 166. Lamarck. Illustr. t. 724. Gært. t. 30.—Class and order, *Pentandria Monogynia*. Nat. Ord. *Campanaceae*, Linn. *Campanulaceae*, Juss.

Gen. Ch. *Cal.* Common Perianth, or rather Involucrum, of many alternate leaves, the inner ones narrowest, containing numerous flowers on short stalks, permanent; proper perianth superior, five-cleft, permanent. *Cor.* of each flower of one petal, regular, in five rather deep, lanceolate, spreading segments. *Stam.* Filaments five, short, awl-shaped; anthers oblong, connected at their base, their summits spreading. *Pist.* Germen inferior, roundish; style thread-shaped, the length of the corolla; stigma swelling, cloven. *Peric.* Capsule roundish, with five angles, crowned with the proper calyx, membranous, imperfectly two-celled, opening by a round orifice at the top. Partition divided from top to bottom. *Seeds* numerous, nearly ovate, affixed to a stalked, globular, unconnected receptacle, in the lower part of the capsule.

Eff. Ch. Corolla wheel-shaped, in five deep linear segments. Stigma club-shaped, cloven. Anthers connected at their base. Capsule inferior, imperfectly two-celled, opening at the top.

Obf. The central flowers are often abortive, their stigma being more tumid and undivided. Linnæus placed this genus in his *Syngenesia Monogamia*, an order now, by general consent, abolished.

1. *J. montana*. Linn. Sp. Pl. 1317. Curt. Lond. fasc. 4. t. 58. Engl. Bot. t. 882. A native of dry hillocks and fields throughout Europe. In England it is known by the name of Sheep's Scabious. The root is annual. *Herb* roughish, pale, with several stems, and oblong, waved, narrow leaves. *Flowers* terminal, solitary, stalked, of a sky-blue, and very pretty. The genus is nearly allied to *Phyteuma* in habit and characters.

There is said to be a perennial variety, about which we have often enquired in vain.

JASK, in *Geography*, a town of Croatia; 14 miles N. of Carlsbad.

JASKAS, a town of Sweden, in the government of Abo; 14 miles N.W. of Abo.

JASLO, a town of Poland, in the palatinate of Sandomirz; 72 miles S.S.W. of Sandomirz.

JASLOWIECZ, a town of Poland, in the palatinate of Kaminiac; 41 miles W.N.W. of Kaminiac.

JASLOWITZ, a town of Moravia, in the circle of Znaym; 10 miles S.E. Znaym.

JASMELÆUM, a medicinal oil, called also by the Persians *jafme*; it is made by putting two ounces of the white flowers of violet into a pint of oil of fefamum. It is used to anoint the body after bathing, and is in great esteem among the Persians for its fragrancy, though it is a sort of smell which many would rather think offensive.

JASMINE, or JESSAMINE-Tree, in *Botany*. See JASMINUM.

JASMINE, *Arabian*. See NYCTANTHES.

JASMINE, *Bastard*. See CESTRUM. See also LYCIUM.

JASMINE, *Cape*. See GARDENIA.

JASMINE, *Fennel-leaved*. See IPOMOEA.

JASMINE, *Ilex-leaved*. See LANTANA.

JASMINE, *Persian*. See SYRINGA.

JASMINE, *Red*. See PLUMERIA.

JASMINE, *Scarlet and yellow*. See BIGNONIA.

JASMINEÆ, a natural order of plants, so called from *Jasminum*, which is one of them. This order is the 37th in Jussieu's system, or the fourth of his eighth class, and is equivalent to the 44th of Linnæus, or *Scpiariae*. For the characters of Jussieu's eighth class, see GENTIANÆ. The order in question is thus characterized.

Calyx tubular. Corolla tubular, regular; (in *Fraxinus* either wanting, or of four petals.) Stamens mostly two. Style one; stigma two-lobed. Fruit either capsular (in the manner of the order of *Acanthi*), or pulpy; in some cases with two cells and two seeds; in others of one cell, with one, two, or four seeds. Embryo straight, flat, generally inclosed in a fleshy albumen. Stem shrubby, more rarely arborefcnt, with opposite branches. Leaves for the most part opposite. Flowers either panicled in an opposite manner, or corymbose.

The sections are two.

1. With a capsular fruit. This contains *Maytenus* of Molina, with *Nyctanthes*, *Syringa*, *Hebe* (which is a *Veronica*), and *Fraxinus*.

2. With a pulpy fruit. This section consists of *Chionanthus*, *Olea*, *Phillyrea*, *Mogorium* (which is properly not distinct from *Jasminum*), *Jasminum* and *Ligustrum*.

The *Jasmineæ* form an elegant and distinct order, valuable for the elegance of their flowers, which, moreover, are usually very sweet-scented, though in some instances unpleasantly strong.

JASMINOIDES. See LYCIUM.

JASMINUM, in *Botany*, from *ιαζιον*, a fragrant ointment, or perfume, alluding to the sweet scent of the flowers. Linn. Gen. 9. Schreb. 12. Willd. Sp. Pl. v. 1. 35. Mart. Mill. Dict. v. 2. Ait. Hort. Kew. ed. 2. v. 1. 15. Brown. Prodr. Nov. Holl. v. 1. 520. Juss. 106. Tourn. t. 368. Lamarck. Illustr. t. 7. Gært. t. 42. Class and order, *Diandria Monogynia*. Nat. Ord. *Scpiariae*, Linn. *Jasmineæ*, Juss.

Gen. Ch. *Cal.* Perianth of one leaf, inferior, tubular, oblong, permanent; its margin five-toothed and erect. *Cor.* of one petal, salver-shaped; tube cylindrical, long; limb flat, in from five to eight deep, somewhat elliptical, lobes. *Stam.* Filaments two, short; anthers small, within the tube of the corolla. *Pist.* Germen superior, roundish; style thread-shaped, reaching as high as the anthers; stigma two-lobed. *Peric.* Berry double, smooth, each of one cell. *Seeds* solitary, large, ovate-oblong, convex on one side, flat on the other, coated with pulp.

Eff. Ch. Corolla salver-shaped; its segments from five to eight. Berry double. Seeds solitary, coated.

This delightful genus consists of 21 supposed species in Willdenow's Sp. Pl. Linnæus confined it to such as have a five-cleft corolla, he having referred those which have eight

JASMINUM.

eight segments in that part to *Nyctanthes*, for want of attention to the fruit. This in the *Arbor trifida*, the only true *Nyctanthes*, is capsular, but in all his other species pulpy; for which reason sir J. Banks and Dr. Solander first properly removed all such to the genus before us, of which their manuscripts contain descriptions of many more, hitherto unpublished. Eleven of Willdenow's species have simple leaves, eight ternate, and two pinnate ones.

Among the former are *J. hirsutum* and *pubescens*, figured in Sm. Exot. Bot. v. 2. t. 118, and there shewn to be one and the same plant; in the same predicament are *angustifolium* and *vimineum*, of which a plate may be seen in Rheede Hort. Mal. v. 6. t. 53. So that the number of species in Willdenow's first section are diminished to nine, and his whole number to 19. One of the most interesting of this first section is the Arabian Jasmine, *J. Sambac*, *Nyctanthes Sambac* of Linnæus, a native of the East Indies, and very general in our itoves, where its elegant white blossoms, purplish in decay, are abundantly produced, and diffuse the sweetest possible fragrance. A double variety, sometimes seen, is highly valued; see Andr. Repof. t. 497. A still finer variety is the *Kudda Mulla* of Hort. Malab. v. 6. t. 51, figured also in Tilli, Hort. Pisan. t. 30. This last, though easily propagated, was confined to the gardens of the grand duke of Tuscany, and not given to any one. Such stupid illiberality met with its just reward after a time, in the loss of the plant, which, if dispersed, might have been preserved.

In the second section are, among others, *J. azoricum*, frequent in green-houses, valuable for its shining broad leaves, and sweet white flowers:

J. fruticans, Curt. Mag. t. 461, native of the south of Europe, hardy with us, bearing yellow but scentless flowers: and

J. odoratissimum, Curt. Mag. t. 285, found in Madeira, very commonly kept in green-houses, for the sake of its very sweet and handsome yellow blossoms.

J. officinale, Curt. Mag. t. 31, our common white jasmine, a native of the East, but so generally cultivated that it can hardly be found certainly wild; and the most showy Catalonian jasmine, *J. grandiflorum*, are the only ones known with pinnate leaves. This last is much more tender than the *officinale*, with larger flowers, elegantly tinged with red underneath. It grows in India, nor is there any good reason for the name of Catalonian jasmine.

JASMINUM, in *Gardening*, a genus containing plants of the hardy and tender, deciduous and evergreen, shrubby kinds; of which the species chiefly cultivated are the common white jasmine (*J. officinale*); the common yellow jasmine (*J. fruticans*); the Italian yellow jasmine (*J. humile*); yellow Indian jasmine (*J. odoratissimum*); the Spanish or Catalonian jasmine (*J. grandiflorum*); the Arabian jasmine (*J. Sambac*); and the Azorian jasmine (*J. Azoricum*.)

This sort has varieties with white striped leaves, and with yellow striped leaves.

The second sort is extremely productive in suckers from the roots.

Method of Culture.—Of these plants the first sort is readily increased by layers or cuttings. The young branches should be laid down in the early autumn, and in the following autumn be taken off, and planted where they are to grow. The cuttings of the young shoots may be planted either at the same time or in the early spring, being protected in the first case, in severe weather, in the winter. When they are well rooted, they may be removed, with

balls of earth about their roots, to the places where they are to grow up and remain.

And the different varieties are increased by budding or grafting them upon stocks of the plain or common kind. See **Budding** and **Grafting**.

In respect to the common sorts, they must be planted against walls, pales, or other fences, that may serve as a support. When planted as a standard, it is difficult to train to a proper head, and keep in order, without destroying the flowering branches which are the extremities of the same year's shoots. On this account they should be permitted to take their natural growth in the summer, and not be pruned or nailed till towards the latter end of March, when the frosts are over, to prevent their being injured by them.

But the varieties should be planted in a southern aspect, and a warmer situation than the common sort, especially the first, which, in very severe winters, should be protected with mats or other means.

The second sort may be increased by layers, or planting the suckers taken from the roots, in the spring or autumn. The layers may be made as in the first sort.

The third sort is capable of being propagated either by budding or in-arch-grafting upon stocks of the second kind, or by layers of the young tender branches made in the autumn or early spring seasons; but the former is the better practice, as producing more hardy plants. It should have a rather warm aspect, as a south wall, and, in very severe winters, have the protection of mats. It requires the same sort of pruning as the first sort.

The four following sorts are more tender in their nature and habits.

The first of them may be increased by seeds or layers of the young shoots. The seeds should be sown in the early spring, in pots of fresh light earth, plunging them in a moderate hot-bed, and when the plants are up, removing them into a second hot-bed to forward them, giving them frequently slight refreshings of water and gradually hardening them to the full air. They should be occasionally watered in the winter, and in the spring following be removed into separate pots, the earth being carefully preserved about their roots. Their first growth may be promoted by placing them in a mild hot-bed. They afterwards require a pretty free air and slight protection from frost in winter. They should have the decayed branches pruned out in the spring, without the others being shortened, as the flowers are produced at the extremities of the branches.

In the latter method the young shoots should be laid down in the early spring, as about March, being slightly nicked underneath at a joint, and often slightly watered in dry weather. In the following spring they may be taken off, and planted out in pots filled with light earth, separately; being afterwards managed as the others.

They may likewise be raised by in-arch-grafting into stocks of the second species, but the plants produced in this way are not so strong as those upon their own stocks, and they are apt to send out too many suckers from the roots.

The second of these tender kinds may also be raised by budding or in-arch-grafting upon stocks of the first species, which renders it more hardy than its own; but the plants are mostly brought from Italy, in bunches of four together, and which, after having their roots moistened, and the shoots and dead parts pruned away, as well as the tops cut down to within a few inches of the grafted parts, may be planted in pots filled with light fresh earth, plunging them in a moderate bark hot-bed, shading them from the sun, and giving them water. When they begin to grow, all the shoots below
the

the grafts should be rubbed off, and the top shoots cut off, free air being admitted, so as to gradually harden them to be set out in a warm situation. They must have the protection of the green-house in winter, and be frequently sparingly watered, a free air being admitted in mild weather.

The third of these tender sorts may be raised by layers and cuttings; but the first is the best method, as the cuttings require much care to make them strike. The young branches should be laid down in the spring, in pots filled with soft loamy earth, plunging them in a tan hot-bed, and watering them occasionally. In the autumn, when they have stricken root, they should be taken off, and planted out in separate small pots, plunging them in a hot-bed, due shade being given. The cuttings may be planted in pots of the same sort of earth during the summer, plunging them in a tan hot-bed, and covering them close with a bell or hand glass, due shade being given, and occasional waterings. When they have taken good root, in the beginning of autumn, they may be removed into separate pots, and be managed as those from layers.

These plants succeed best when kept in the stove.

The last of these tender sorts may be increased in the same way as the fourth species, and requires the same management afterwards.

The three first species may be employed as plants of ornament for covering walls, palings, and other naked erections about houses, as well as occasionally introduced as standards in clumps, borders, and other parts of pleasure grounds.

The other sorts afford variety among other potted green-house and stove plants. Some may likewise be trained against warm walls or palings, especially the last kind which has a fine fragrance, and at the same time a good appearance.

JASMUND, in *Geography*, a peninsula of the island of Rugen, which forms, with another peninsula called "Witto," a large bay, fronting the north-east, which, in hazy weather, often proves destructive to vessels. The bay is called "Tromperwyck." N. lat. $54^{\circ} 35'$. E. long. $13^{\circ} 45'$.

JASOUN, a town of Asiatic Turkey, in the government of Sivas, on the Black sea; 75 miles N.E. of Samoun.

JASPACHATES, in the *Natural History of the Ancients*, a name given to some varieties of the agate-jasper, mentioned under No. 5. in the following article.

JASPER, *Jaspe*, Fr. *Jaspis*, in most other European languages; a mineral species belonging to the class of earthy fossils, and divided by Werner into six sub-species distinct from each other, both by their oryctognostic and geognostic characters; viz. 1. Egyptian jasper; 2. Ribbond jasper; 3. Porcelain jasper; 4. Common jasper; 5. Agate jasper, and 6. Opal jasper. They agree in their being opaque or slightly translucent at the edges, in hardly ever affecting vivid colours, in their always occurring massive and in common external shape (except the Egyptian jasper); in their hardness being rather inferior to that of common quartz. The remaining external, in conjunction with the geognostic, characters have been thought sufficient by Werner to divide the jaspers into the above sub-species, which by some other writers are considered as varieties only. Some jaspers are nearly related to heliotrope, others approach the nature of indurated clay, argillaceous iron-stone, and lithomarge; the opal jasper passes into the opal.

Almost all coloured jaspers, according to Haüy, are conductors of electricity; a property observable by bringing

them into contact with an electrified conductor, when, on the approach of the finger, they emit sparks.

1. *Egyptian jasper*; *Egyptian pebble*. *Quartz jaspe panache*, Haüy; *Caillou d'Egypte*, Fr.; *Egyptischer Kiesel*, Nilstein, Germ.; *Silex Ægyptiacus*, *Niloticus*, Lat.

Brown and yellow are the predominant colours of this jasper, and generally several shades of them occur together in the same piece. The brown is usually a deep chestnut or liver brown, sometimes approaching to blackish brown, and an admixture of red is likewise observable; at Baaden a variety is said to occur in which the red predominates. The yellow is mostly a deep isabel-yellow, also greyish yellow; it likewise passes into several shades of pale red. Two of these colours are generally mixed in such a manner that the one, particularly the brown, forms the ground, while the other represents a succession of variously contorted, concentric, irregular zones or bands, and spots which, in conjunction with black dendritical and other delineations, often produce representations of grottos, landscapes, human figures, and other objects.

It has hitherto been found only in rolled mostly oblong pieces, and in the form of balls, with uneven surface. These have also been found hollow, drused with brown quartz crystals; but such specimens are very rare.

Both externally and internally it is moderately glistening; lustre more or less resinous. Fracture flat conchoidal. It is pretty easily frangible. Its hardness is rather less than that of quartz. Fragments indeterminately angular and very sharp-edged; perfectly opaque, and only slightly translucent at the edges. Specific gravity 2.564, Briffon; 2.600 Brunnich.

Before the *blow-pipe* the Egyptian jasper is infusible without addition. When ignited for a considerable length of time it loses its colour.

The proportion of the component parts of this substance must, of course, be subject to considerable variation, according as the brown or yellow mass predominates. A variety analyzed by Delametherie, yielded

| | |
|--------------|----|
| Silica | 54 |
| Alumine | 30 |
| Oxyd of iron | 16 |

This jasper is found pretty abundantly in Egypt, particularly in the neighbourhood of Cairo and Suez, on the borders of the Nile. According to Dr. Reufs, it occurs also, as rolled pieces, at Kofchatek, in the Bunzlau circle of Bohemia. It is also said to be found at Freife in Lotharingue.

Of its *geognostic* situation, no more is known than that it always occurs in rounded pieces, which appear not to owe their origin to rolling, but to be original, and produced by infiltration. It has been ingeniously remarked by Mr. Mohs, that the interior of those balls is generally found to agree exactly with their exterior form, in the same manner as in some hornstone-balls, in which the nucleus is separated from the surrounding coatings by a conformable coating of crystallized quartz, &c. If this be the case, neither the colour, nor the delineations in the Egyptian jasper, can be considered as derived from without, nor its form as a secondary one; and we may further infer from this, that the balls of this jasper, (at least those of the brown variety from Egypt,) are formed like agate balls in rocks belonging to the formation of the amygdaloid. Werner, as we are told by Mr. Jameson, suspects that it occurs imbedded in a brown ochre of iron. Mr. Patrin is of opinion, that these rounded masses have originally been simple ferruginous geodes, formed in marly ferruginous soil, abounding with iron ochre, which has moulded itself into oval masses composed

posed of concentric layers. These layers, in the progress of time, will shrink both by desiccation and the effects of the mutual attraction of the ferruginous molecules, which have a perpetual tendency to enter into the closest possible combination. The layers of the geode, by their condensation, become more or less separated from one another, and its centre remains empty, in case the whole mass is composed of nothing but pure oxyd of iron; but when mixed with marle, this latter is continually pressed towards the centre, where it forms a nucleus more or less light coloured, in proportion as it has parted with the iron it contained, and which has united with that of the neighbouring layers. In the ordinary way of occurring, (Mr. Patrin observes,) it appears that these geodes remain nearly in the same state in which they were formed; but in Egypt some particular circumstance has made them undergo a new modification. Decomposition, or other circumstances that may have altered the nature of the soil that contained these geodes, must have caused the development of various fluids, which penetrating through the pores of the geode, and combining with the fluids it contained, have formed there the siliceous matter in the same manner in which water is formed by the combination of hydrogen and oxygen.

Cordier observed this jasper to enter into the composition of an Egyptian breccia, made up of a great variety of rounded stones; and it is supposed that those places where this breccia forms extensive beds, the greater part of the rolled pieces that are seen there, owe their present detached state to a disintegration of such masses.

The Egyptian jasper is much esteemed on account of its delineations, which are often very singular; and as it is susceptible of a very high polish it is cut by lapidaries into thin pieces for snuff-boxes, broaches, &c.

2. *Ribbond jasper, Striped jasper*, Kirw. James.; *Band jaspis, Band stein*, Germ.; *Quartz jaspé onyx*, Häüy. *Jaspé rubané, J. en ruban*, Broch, &c. *Jaspis vittata*, Forst.

It always exhibits two, three, or more colours together, which are disposed in alternating, straight, seldom waved, stripes or layers. The colours are yellowish, greenish, and pearl-grey, yellowish, and greenish-white, ochrey, and isabell-yellow, mountain and leek-green, flesh, cherry, and brownish-red.

It is always found massive, internally it is dull; the lustre it occasionally exhibits proceeding from admixed heterogeneous particles.

Its hardness is less than that of quartz. It is brittle and easily frangible; fracture conchoidal, but sometimes approaching to splintery or earthy; also a tendency to the flat. fracture has been observed in some varieties. Fragments indeterminately angular, sharp-edged. Specific gravity from 2.500 to 2.800.

The ribbond jasper is found in Siberia, particularly in the districts of Koliwan and Catherinebourg; in Sicily; Corsica; Switzerland; in Germany, at Gnadstein and Wolfstz near Frohburg, in the Leipzig district; at Ilmenau in Henneberg, at Falkenstein; on the Hartz, and in the Palatinate. It probably occurs also, according to Jameson, in the Pentland hills near Edinburgh.

The geognostic relations of this jasper appear to be sufficiently distinct from that of the others, it forms considerable masses and beds, with whose connection, however, we are as yet unacquainted. The ribbond jasper of the Hartz, as connected with grauwacke on which it rests, cannot be doubted to be subordinate to the transition rocks. Mr. Patrin considers this jasper and all others that occur in beds,

and are entirely opaque, to be primitive; and most of the Siberian jaspers are in that predicament. He refers to the secondary jaspers, all those that have a vitreous fracture combined with a slight degree of translucidity. But several circumstances connected with the geognostic occurrence of the different jaspers, prevent us from admitting this distinction.

The finest Siberian ribbond jasper is found, together with other varieties, in the hills that border on the southern part of the Ural mountains, about 100 or 150 leagues northward of the Caspian sea, in the neighbourhood of the fortress of Orskaia. The red and green layers of this jasper being so well defined and regular, it is made use of for several purposes of ornament, particularly for cameos. It is not found in large masses. Patrin informs us, that when seen in its native place, it appears to admit of being quarried in blocks of several feet in size; but as soon as the rock is wrought, it separates into small pieces.

3. *Porcelain-jasper. Porcellanite*, Kirw. *Jaspé porcellaine*, Broch. *Jaspé porcellanite*, Brongn. *Thermantide porcellanite*, Häüy. *Diapros porcellanico*, Nap. *Porzellan-jaspis, Porzellanstein*, Germ.

Its principal colour is a bluish-grey, of various intensity, generally intermediate between pearl-grey and lavender-blue. It is also found yellow, such as ochre and straw, and even pale orange-yellow, which passes into brick-red. Clove-brown and liver-brown are likewise mentioned among its colours; as also bluish-black and mountain-green. Sometimes several of these colours occur together in spots, and in flamed and clouded delineations. The bluish-grey varieties, however, exhibit generally but one colour, besides the red and yellowish-brown colour on the rifts, and the red or brown coloured impressions of various vegetables.

It occurs commonly massive, and sometimes in blunt-edged and rounded rolled pieces, which, in the rents they exhibit, bear evidently the marks of the action of fire.

Internally its lustre is inconsiderable; it seldom approaches to shining.

Its hardness is inferior to that of most other jaspers; it is very brittle: fracture imperfectly conchoidal, approaching to even: fragments indeterminately angular, pretty sharp-edged; perfectly opaque; specific gravity 2.330, Kirwan; 2.603, Wiedenmann.

By the continued application of intense heat, the porcelain-jasper, according to Wiedenmann, may be fused into a black scoria. But the yellow variety, operated upon by Klaproth, shewed no change either in the clay or charcoal crucible, except that in the former it was seen to contract, and its surface to become dark steel-grey and dull, while in the charcoal crucible a small piece became black and glistening, and acquired a yellowish-brown surface.

The constituent parts of the pearl-grey variety, from Stracke, in Bohemia, are stated as follows by the late Mr. Rose, by whose death the world has lost one of the most accurate analysts.

| | | | | | |
|--------------|---|---|---|---|-------|
| Silica | - | - | - | - | 60.75 |
| Argil | - | - | - | - | 27.25 |
| Magnesia | - | - | - | - | 3.00 |
| Oxyd of iron | - | - | - | - | 2.50 |
| Kali | - | - | - | - | 3.66 |
| | | | | | 97.16 |

Karsten Min. Tabellen, p. 25 and 71.

Mr. Lampadius, who examined the lavender-blue variety

J A S P E R.

of porcelain-jasper, obtained results very different from those of the preceding analysis, *viz.*

| | | | | |
|--------------|---|---|---|-------|
| Silica | - | - | - | 33.50 |
| Argil | - | - | - | 58.00 |
| Magnesia | - | - | - | 4.00 |
| Oxyd of iron | - | - | - | 3.00 |
| | | | | 98.50 |

Samml. Pract. Chem. Ath.

This substance is found in Bohemia (at Schwintzitz, Stracke, near Carlsbad, &c.), in Saxony (at Planitz), in the Upper Palatinate, in Heflia (near Almerode), in Saarbruck (at Dutweiler), in Siberia (at Kufnez, in the district of Koliwan), Iceland, &c. It occurs in considerable masses, and obviously owes its origin to the action of subterraneous fire: Werner therefore ranks it with his pseudo-volcanic, or such fossils whose nature has been considerably altered by the proximity of that agent. That it has not been in a state of fusion is proved by the impressions of plants so frequently observed in it, and which bespeak the fossil to have originally been that variety of slate-clay which belongs to the coal formation. We accordingly find it in company with burnt clay, earth-slag, &c. in countries which have either formerly experienced the ravages of subterraneous fires, or where beds of coal are actually in a state of ignition. It is a fact worthy to be noticed, that at Dutweiler, in the county of Saarbruck, which not long ago experienced the spontaneous inflammation of a bed of coal, both porcelain-jasper, and other pseudo-volcanic substances, are seen as it were in a progressive state: they are more or less changed in proportion to their distance from the principal seat of the subterraneous fire; and the vegetable impressions which they exhibit are in every respect the same with those observed on the slate-clay.

The porcelain-jasper has obtained its name from its appearance, and the circumstances connected with its origin. It takes a moderate polish, but is not applied for ornamental purposes. Indeed, there are seldom any large pieces of it found without rifts and fissures.

4. *Common jasper. Gemeiner jaspis, Germ. Diaspro commune, Nap. Quartz jasse, Haüy. Jasse commun, Broch. Silex jaspis vulgaris, Lat.*

Its principal colours are brown, red, and yellow; the brown is yellowish, reddish, clove, liver, blackish-brown, approaching to black; the red is tile, and blood-red of various shades, seldom flesh-red; the yellow is mostly ochre-yellow, which passes into greenish-yellow; also various shades of green are observed among the colours of the common jasper, such as mountain, verdigris, and olive-green, but they are less frequently met with. Several of these colours are sometimes seen together in small irregularly striped, spotted, and clouded delineations.

It occurs commonly massive, but also alternating in thin layers with quartz, &c. and disseminated, as in the blood-stone; it is likewise found in blunt-edged rolled pieces.

Internally its lustre is intermediate between glistening and shining; it is rather vitreous.

It is nearly of the same hardness as the preceding subspecies; it is brittle and easily frangible: fracture more or less perfectly conchoidal, approaching in some varieties to splintery, from which it passes into fine earthy. Fragments indeterminately angular, pretty sharp-edged: they are generally opaque, but now and then translucent at the edges. Specific gravity, 2.580 to 2.700, Kirwan; 2.652 to 2.663, Sauffure; 2.666, Muschenbroek; 2.692, Blumenbach.

Common jasper is infusible without addition before the blow-pipe; it only loses its colour by the application of intense heat; with borax it is dissolved without ebullition, while soda and phosphoric acid combine with it in an imperfect manner only; when urged by oxygen gas it is converted before the blow-pipe into a white or dark grey globule.

According to Kirwan the common jasper consists of

| | | | | |
|--------------|---|---|---|-------|
| Silica | - | - | - | 75.00 |
| Argil | - | - | - | 20.00 |
| Oxyd of iron | - | - | - | 5.00 |
| | | | | 100 |

Mr. Lampadius thinks that he has found that the reddish-brown variety is generally coloured by the oxyd of uranium and some iron, the proportion of the uranium being about three per cent.

Among the *localities* of the common jasper are: Saxony (Altenberg, Geising, Freiberg, Seifersdorf, Schneeberg, Eibentock, &c.); Bohemia (Jeshkner mountains, &c.); Silesia (Bunzlau, Landshut, &c.); Salzburg; Steurmark; Hungary and Transylvania; Italy, particularly Sicily; France; Scotland (according to Jamelon, in the transition rocks near Edinburgh), the Shetland islands, Norway, &c.

The common jasper is exclusively a production of veins: it occurs in such as are chiefly composed of iron ore, to which indeed it appears to bear great geognostic affinity. The substances with which it occurs together in these veins are red and brown iron-stone, iron-slint, quartz, opal, lithomarge, &c.; as also, sometimes, galena, pyrites, and vitreous silver. But common jasper is also found constituting veins for itself without any metallic ores, and only accompanied by some amethyst or common quartz, which in this case generally occupy the middle of the vein. It likewise occurs as a constituent part of agate balls in amygdaloid. At Salzburg it is said to have been found in calcareous and clay slate rocks, and at Offenbanya, to form the basis of a particular kind of porphyry; but this latter observation seems to be founded on error, since all the Transylvanian varieties of porphyry that have fallen under the observation of Werner, and other mineralogists well acquainted with the true characters of jasper, have pronounced them to belong to the clay, horn-stone, and pitch-stone porphyries.

Most varieties of the common jasper are susceptible of a tolerably good polish, whence they are frequently cut by the lapidaries, and formed into snuff-boxes, buttons, seal-stones, (see GEMS, engraved) &c.; some varieties that may be procured in voluminous blocks are wrought into tables, mantle-pieces, small pillars, and other objects of ornamental architecture. The following are most frequently seen in the hands of the lapidary:

The *red jasper*, on which we possess some very fine antique engravings. It is found at Giuliano, at San-Stefano, at Cornerata, and at Monte-Vago, in Sicily; and occurs also in the vicinity of Geneva, in the valley of Chamouni; at Grenoble, in the department of the Isère; and at Mont-More, in the department of the High Alps. Canavais, in Piedmont, is said likewise to furnish good red jasper. This should not be confounded with iron-slint and sinople, which is a variety of quartz.

The *yellow jasper*: it is seldom found in large pieces, and only used for inlaid work, mosaic, &c. The best is found at Giuliano, in Sicily; and it occurs also in the valley of Chamouni, and between Varet and Grenoble, in the department of the Isère. This variety is seldom found equally tinged, but often traversed by white and red veins.

Brown

Brown jasper of various shades. This is the most common, and most frequently seen converted into objects of ornament, vases, pedestals, &c. It takes a very fine polish.

What the Italians call *Paragone* is, properly speaking, the Lydian stone; but the name is now and then applied to a black variety of jasper, much esteemed by lapidaries for seal stones, &c. It is said to be found at Giuliano in Sicily. (Also a black marble is sometimes improperly called *Paragone*.)

The existence of a *snow white* variety of common jasper is doubted by some. What goes by this name is a white stone marked here and there with fine red lines; but as it has been seen cut and polished only, its nature is not determined with accuracy. Another white jasper is mentioned by Herrmann as occurring in more elevated parts of the Altaic mountains, near the source of the Korgoo; it is marked with black dendritæ. Specimens before us have the appearance of horn-stone.

The galactites of Pliny is, by some writers, considered as a white jasper.

5. *Agate Jasper; Jasp. agate; Agat Jaspis*, Germ.

Its colour is flesh-red, reddish-white, and brownish; also yellowish-white, which passes into isabell, straw, and greenish yellow. These colours form concentric rings, and figures resembling plans of fortifications, &c.

It occurs massive. Has scarcely any lustre. Is rather less hard than common jasper. Its fracture is small and flat conchoidal, approaching to even. The other external characters are those of the preceding species.

The agate-jasper is only found in agate veins, and in agate balls occurring in amygdaloid and porphyry rocks.

It is cut and polished.

6. *Opal Jasper, Quartz resinite commun*, Häüy.

Its principal colours are shades of red; flesh-red, scarlet-red, brick-red, blood-red, cherry-red, brownish-red; it also occurs reddish and yellowish-brown, and seldom ochre-yellow; these colours exist variously mixed, as spots and veins in the same piece; sometimes they are uniform.

It occurs massive.

Internally its lustre is more or less shining, and intermediate between vitreous and resinous.

It is nearly of the same hardness as the preceding subspecies, brittle, and easily frangible. Fracture large or small flat-conchoidal. Fragments indeterminately angular, sharp-edged, scarcely translucent at the edges.

The preceding characters agree partly with those of the opal; and indeed the geognostic relation of the opal-jasper is perfectly the same as that of the opal. It is mostly found nidulating in porphyry, sometimes in veins, and in both cases it is constantly accompanied by common opal.

Its principal locality is Kaschau, Tockay, in Hungary, and it is also found near Constantinople, and in the mountains of Kolywan, in Siberia.

JASPONYX. See JASPER, No. 2.

JASQUE, in *Geography*, a town of Persia, in the province of Mecran, which gives name to a cape in the gulf of Ormuz. N. lat. 25° 40'. E. long. 59° 4'.

JASSARI, a town of Sweden, in the Lapmark of Kimi, in the gulf of Bothnia; 50 miles N.N.E. of Kimi.—Also, a river of Sweden, which runs into the gulf of Bothnia, at the above-named town.

JASSELMARE, a country of Hindoostan, bordering on the lower part of the course of the river Puddar, and on the sandy desert, which, as well as Nagore and Bickaneer, form a number of petty rajahships, and are understood to be mostly inhabited by Rajpoots.

JASSENES MARMOR. See MARMOR.

JASSI, in *Geography*, a town of Turkistan, on the Surr; 140 miles W. of Taraz.

JASSINGPOUR, a town of Hindoostan, in Oude; nine miles E. of Sultanpour.

JASSUM-KALASI, a town of Asiatic Turkey, on the W. coast of Natolia; 40 miles W. of Moglah.

JASSY, a city and capital of Moldavia, supposed to have been garrisoned in the time of the Romans; having a citadel and some fortifications. It is the see of an archbishop, and the inhabitants are chiefly Greeks; 200 miles E. of Otchakov. N. lat. 47° 10'. E. long. 27° 44'.

JASTIAN, in the *Greek Music*, a name given by Aristoxenus to a mode more generally called by other authors *Ionian*. See *MODE and Music of the Ancients*.

JAT, in *Geography*, a town of Sweden, in the province of Smaland; 20 miles S. of Wexio.

JATOE, a town on the island of Borneo; 120 miles N. of Nagara.

JATRALIPTES, in *Ancient Medicine*, and the *Gymnasium*, derived from *ιατρος*, *physician*, and *ἀλειψα*, *I anoint*, an appellation given to the persons who superintend the use of oils and unguents in the gymnasium, as well as to those who directed unctuous applications to the sick. Pliny inveighs against the luxurious extent to which the use of these perfumed ointments had been carried in his time, when the application of them employed as many people as the management of the baths. Under the jatralliptes were the *unctores*, who applied the ointment; the *fricatores*, who rubbed or curried the skin with the strigil, or other instruments of a similar kind; the *dropacista*, or *aliparii*, whose business it was to remove the hair, either by extraction or depilatory applications; and, lastly, the *trahatores*, who were employed in gently moving and squeezing, or kneading all the limbs, to render them supple, and at the same time to give a pleasing sensation. The jatralliptes was also called *alipies*; both which terms were sometimes also used to denote the masters of the exercise, such as the *gymnastes* and *padotriba*. The external application of oil, for the cure of diseases, became a distinct branch of the medical art, and was called

JATRALIPTIC MEDICINE. This was first introduced, according to Pliny, by Prodicus, a native of Selymbria, and a disciple of Hippocrates. The volumes, which treat expressly of its precepts, are lost; but we find the anointing of the body with oil recommended, among other remedies, in various diseases; as fevers, pustular eruptions, gout, palsy, lethargy, tetanus, hydrophobia, cholera, melancholy, dropsy, profuse sweating, and itch. In surgery, it was supposed to allay irritation in those who had undergone severe operations, to resolve indurations, and to remove the pain and swelling attending luxations. See Le Clerc, *Hist. de la Med.* part 3. lib. i.—Pliny *Nat. Hist.* lib. xiii. cap. 1. and 3. Lib. xv. cap. 4. &c. Celsus, *passim*. Prosp. Alpin. *de Med. Ægyptorum*, lib. iii. cap. 15.—Also, Mr. Hunter's learned Essay on the External Use of Oil in the *Edin. Med. and Surg. Journal*, vol. ii. p. 185, for April, 1806.

JATROPHA, in *Botany*, apparently from *αιτρος*, a *physician*; the physic-nut. This is a virulent tribe of plants, whose oily seeds, at least their cotyledons, are either eatable and wholesome, or simply purgative, like those of its nearly the *Ricinus* or *Palma-Christi*.—Linn. *Gen.* 503. Schreb. 655. Willd. *Sp. Pl.* v. 4. 557. Mart. *Mill. Dict.* v. 2. Juss. 389. Lamarck. *Illustr. t.* 791. Gært. t. 108. (Manihot; Tourn. t. 438.)—Class and order, *Monoecia Monadelphica*. *Nat. Ord.* *Tricocce*, Linn. *Euphorbia*, Juss.

Gen. Ch. Male, *Cal.* Perianth scarcely manifest. *Cor.* of one petal, funnel-shaped; tube very short; limb in five deep,

deep, roundish, spreading, convex segments, concave underneath. *Stam.* Filaments ten, awl-shaped, approaching each other in the middle, the five alternate ones shorter, all erect, shorter than the corolla; anthers roundish, versatile. *Pist.* a slight rudiment in the bottom of the flower.

Female, *Cal.* none. *Cor.* rosaceous, of five petals. *Pist.* Germin superior, roundish, with three furrows; styles three, cloven; stigmas simple. *Peric.* Capsule roundish, three-lobed, three-celled; each cell with two valves. *Seeds* solitary, roundish, large.

Eff. Ch. Male, Calyx inconstant. Corolla of one petal, funnel-shaped. Stamens ten, alternately shorter and longer.

Female, Calyx none. Corolla of five petals, spreading. Styles three, cloven. Capsule of three cells. Seeds solitary.

Obf. *J. urans* is said to have but nine stamens. Willdenow reckons 17 species of this genus, of which about eight were known to Linnæus, though not very perfectly. For examples of *Jatropha* may serve

J. pandurifolia. Andr. Repof. t. 267. Curt. Mag. t. 604. (*J. acuminata*; Venten. Jard. de la Malmaif. t. 52)—A native of Cuba, remarkable for its fiddle-shaped leaves, and beautiful deep scarlet flowers.

J. Curcas. Jacq. Hort. Vind. v. 3. t. 63; a native of South America, sometimes kept in the stoves of botanic gardens.

J. Manibot, whose root makes the Cassava bread in the West Indies, being, though a virulent poison, rendered sweet and harmless by washing its grated substance.

All these are shrubs. The leaves of the whole genus are stalked, alternate, generally lobed, and often palmate. *Flowers* corymbose.

JATS, JATES, or *Jetes*, a tribe of Hindoos, who long since the death of Aurungzebe erected a state in the provinces of Agra and Delhi. They appeared at first no otherwise than as banditti, but at last formed a regular state, and fixed their capital at the city of Agra, and appear to have possessed a tract of country, along both sides of the Jumnah river, from the neighbourhood of Gwalior to that of Delhi; in length about 160 miles and 50 broad. Col. Dow, in 1770, estimated their revenue (perhaps extravagantly) at 200 lacks of rûpees, and their force at 60 or 70,000 men. This nation is traced by P. Wendell from the countries lying between the S.E. confines of Moultan and Gohud. Tamerlane, it is certain, made war on a people, called the "Getes," in his march from Batuir to Samanah. Nudjuff Cawn, at a late period, dispossessed the Jats of their whole country, except the confined territory of Bhartpour. Madajee Sindia has, in turn, stripped Nudjuff Cawn's successors of these conquests, which are now scarcely worth possessing, although a few years ago, under Soorage Mull, they ranked among the most flourishing provinces of Hindoostan. The Jats no longer exist as a nation; all that remains to Runjet Sing, the son of Soorage Mull, being the fort of Bhartpour, or Burratpour, situated about 45 miles on the west of Agra, with a small territory of four or five lacks of rupees. The rajah of Gohud is of the Jat tribe, but unconnected with Rumjet Sing. Rennell's Memoir.

JATTENDALS, a town of Sweden, in Helplingland; 16 miles N. of Hudwickswall.

JATTIR, in *Scripture Geography*, a city of Dan (Josh. xv. 48.), afterwards given to the Levites of Kohath's family. (Josh. xxi. 14.) Eusebius says, that it is situated in the district of Daroma, towards Malatha, about 20 miles from Eleutheropolis.

JATTRA, in *Geography*, a town of Bengal; 15 miles N. of Midnapour.

JATTS, a small island in the Atlantic, near the coast of Guinea. N. lat. $11^{\circ}48'$. W. long. $15^{\circ}50'$.

JAU DE ST. ELIAS, a town of Brazil, on the river Negro; 70 miles W. of Fort Rio Negro.

JAVA, one of the largest islands constituting the Archipelago in the East Indian sea, about 650 British miles in length, and in medial breadth about 100 miles, situated between $5^{\circ}45'$ and $8^{\circ}48'$ S. lat., and 105° and $114^{\circ}40'$ E. long. This island lies nearly in the direction of E. and W. and to the S. and W. its shores are washed by the southern Indian ocean. On the N.W. lies the island of Sumatra, from which it is separated by the straits of Sunda; to the N. Borneo, from which it is separated by the Java sea; to the N.E. at a considerable distance, Celebes; to the E. Bali, divided from it by a narrow passage, called the straits of Bali. This island is the southernmost of those four large islands, the other three being Sumatra, Borneo, and Celebes, which were formerly known by the appellation of the Sunda islands; and when the Dutch company first established themselves here, Java was divided into three large empires, *viz.* Bantam, Jaccatra, and the empire of the Soefoehoenam, which last was the most extensive, and comprehended full two-thirds of the whole island, Cheribon being feudatory to it. But it is at present divided into five states or empires, *viz.* Bantam, Jaccatra, Cheribon, the empire of the Soefoehoenam, and that of the Sultan; which altogether contain 123 provinces, or governments, the kingdom of Bantam being considered only as one. The four first of these are so dependent on the Dutch, as to be under engagements to deliver their produce to the Dutch, and not to sell any of it to any other nation. Each province, or government, consists of a certain number of "tjatjars," or families, the number of which, throughout the whole of Java, including Bantam, amounted, in the year 1777, to 152,014. These families are estimated to consist of 912,084 persons; and if to these we add the inhabitants of the principality of Madura, which, though a separate island, is always considered as connected with Java, and contains 10,000 families, or 60,000 persons, the whole population of Java and Madura will amount to 972,084 persons. Huyfen, however, gives the population of Java, exclusive of Madura, as follows: *viz.* in the kingdom of Bantam, 5000 families, in Jaccatra 33,914, in Cheribon 15,000, in the Mataram, or empire of Java Proper, 94,200, making in all 148,114 families, which, allowing six individuals to each family, will give 888,684 for the whole number of inhabitants; but from more recent accounts he infers, that the population of Java is $1\frac{1}{2}$ or 2 millions of people. These statements do not include the inhabitants of *Batavia*; which see. A chain of high mountains, commencing to the E., in the province of Balambouang, and running through it to the W., but decreasing in height, divides Java, longitudinally, into two parts, of which the northern portion is the largest and the best. The north coast has every where a low and woody foreland, with some hills, particularly W. of Bantam, where the high land stretches down to the sea-coast. This island has several deep bays on the north side, as those of Bantam, Batavia, Cheribon, Samarang, Joana and Sourabay, which afford every where good anchorage. The south coasts are much less known than those on the north. In the good monsoons, the sky is almost always clear, except near the time of the breaking up of the monsoons, when many and violent thunder storms rapidly succeed each other. In the bad monsoons, the west winds, which then prevail, bring with them heavy rains and violent thunder-storms, without much alteration in the temperature; the thermometer, in the warmest part of the day, generally standing at between 82° and 88° . The effect of this de-

gree of heat is much moderated by the alternate land and sea breezes, which blow every day in regular rotation. The barometer seldom varies more than two or three lines. Thunberg mentions several volcanoes in this island, one of which had overwhelmed with ashes a great number of coffee plantations. Java is watered by a great number of rivers, which descend from the chain of mountains above-mentioned, but none of them are navigable for large vessels. The soil is every where a reddish granulated clay, which in the dry season is so hard, as to be incapable of cultivation without much moistening, but with little labour it is extremely fertile. Ploughing is performed with buffaloes, which abound in this island. In general agriculture no manure is used; but the gardens are moistened with water in which oil-cakes have been soaked, and which renders the soil rich and fat. The only method which the farmer takes with his land consists in burning upon it all the weeds and rubbish which it produces; and when one piece of ground ceases to yield sufficient crops, recourse is had to another; and the first is suffered to lie fallow for several years, after which it again recovers its fertility. The articles produced in this island are much more valuable than those of all the neighbouring countries; of these the first article is rice, which not only supplies the inhabitants but provides for the eastern provinces and the island of Ceylon: this rice is of two kinds, one sort being set nearly under water and another sort planted in the rainy season, on high ground and upon the mountains; the former, however, is the best, and bears the highest price. The pepper of Java is also a profitable article to the Dutch company, and so is the sugar, the best of which is from the province of *Jaccatra*, which see. Coffee is likewise a product very advantageous to the company, the greatest quantity being furnished by the provinces of *Jaccatra* and *Cheribon*. Cotton is also a production of Java of great value. Java also yields to its possessors the article of salt. The N. E. coast of the island, and part of the district of *Cheribon*, afford a very large quantity of timber, logs, beams, boards, &c. which not only supplies *Batavia* for various purposes, but admits of an annual exportation of a considerable quantity to several of the out-factories, and in particular to the Cape of Good Hope. Indigo, though it be not an original production of Java, has been cultivated with tolerable success since the Dutch company have been established here. Turmeric, long pepper, and cubebs, are also productions of this island. This island abounds with fruit-bearing trees, such as the cocoa-nut palm, the *Suri* tree, which yields the palm-wine or toddy, china-oranges of a larger and smaller size, the tamarind-tree, the shaddock, the durioon or derioon-tree, the fruit of which resembles the bread-fruit, and which is considered as diuretic, sudorific, and serviceable in expelling wind, the *Surfak*-tree, the mango-tree, the mangostan, lemon and lime-trees, pine-apples, and many others.

The native inhabitants, called *Javanese*, whether they belong to the kingdom of *Bantam*, or to any other part of Java, are of a middling size, generally well proportioned, of a light brown or yellow complexion, with a broad forehead, and flattish nose, curving downwards at the tip. The hair is black, and always kept smooth and shining by the use of cocoa-nut oil. They are in general proud and indolent, as well as cowardly. Their principal weapon is a kind of dagger, called a "*kris*," which is often poisoned, and causes immediate death. Arrogant towards their inferiors, they are no less cringing with respect to their superiors, from whom they expect any favour. Their dress consists in a piece of cotton, wrapped round the waist, and drawn between the legs, so as to be fastened behind. They are otherwise naked, except that they wear a small cap on the

head. Those of superior rank wear a wide Moorish coat of flowered cotton, or other stuff, and in general turbands. They suffer no hair but that of the head to grow. The dress of the women is little better than that of the men, except that it is more close and covers more of the body; the hair of the head, worn long, is turned up, and twisted round the head like a fillet, fastened with long bodkins of various materials, and adorned with flowers. Men and women are fond of bathing. Children of both sexes are entirely naked till about eight or nine years of age. Twelve or thirteen is their age of puberty. The *Javanese* are polygamists, and besides their wives, who are as many as they can maintain, they take their female slaves for concubines. The women are more comely than the men; they are extremely jealous; and punish those whom they suspect of inconstancy and infidelity by the administration of emaculating drugs. Their habitations, rather huts than houses, are constructed of split bamboo, interlaced or matted, plaited with clay, and covered with the leaves of the cocoa tree. The entrance is low, and they have neither door nor shutter. The whole house consists usually of one apartment, in which husband, wife, and children, and also their poultry, of which they keep a great number, lie together on the ground. Their chief food is boiled rice, with a little fish, and their drink is water. They take a little arrack when they can obtain it, and are almost always chewing betel or pinang; and likewise a sort of tobacco, produced here, and therefore denominated *Java tobacco*. This they smoke through pipes made of reed. They sometimes put opium into their pipes with the tobacco, in order to invigorate their spirits; but the continual use of it rather deadens them. They have neither tables nor chairs; but sit upon the ground, on mats, with their legs crossed under them. They make no use of knives, forks, or spoons, but eat with their fingers. They have a certain kind of musical instrument, called "*gomgome*," consisting in hollow iron bowls, of various sizes and tones, upon which a person strikes with an iron, or wooden stick, and which emit sounds like a set of bells. They are very fond of cock-fighting, for which they keep a peculiar breed. The tax upon their game-cocks forms part of the revenue of the province of *Jaccatra*. One of their favourite diversions, at which they are very dextrous, is a kind of tennis-play; in which they strike the ball, which is of the size of a man's head, hollow, and made of matted reeds, with their feet, knees, or elbows. Their manner of salutation consists in touching the forehead with the right hand, accompanied by a slight inclination of the body. The *Mahometan* religion, introduced into Java by the *Arabians*, is predominant over the whole island; though it is said, that far inland, over the mountains, towards the S. side of the island, there are still some of the aboriginal idolatrous natives. Mosques are erected all over the island, and there is a famous one near *Cheribon*. They are very particular and nice about the tombs of their faints, and will suffer nothing unbecoming to be done upon or near them. They do not bury their dead in coffins, but simply wrap them in a piece of white linen, and having deposited them in the grave, place two stones upon it, one at the head, and one at the feet. These stones, they believe, are to serve as seats for the two angels, who, after their death, examine into their conduct, while in this world. They have both male and female physicians, who are said to perform wonderful cures by means of their knowledge of the medicinal and vulnerary herbs. Much friction of the affected parts is one of their chief means of cure. This is done with two fingers of the right hand, which are pressed down by the left, and passed continually downwards, after having first anointed

anointed the part with water mixed with fine ground wood, or with oil. The coin of Java is of lead, like that of Sumatra and Borneo. The language of Java is the Malay, or a dialect somewhat akin to it. The original inhabitants of the country are not suffered to be made slaves, but are a free people, governed by their own emperors, kings, and governors. The capital of Java is *Batavia*; which see.

JAVA Head, the western point of the island of Java. S. lat. $6^{\circ} 47'$. E. long. $107^{\circ} 40'$.

JAVA, Little. See *BALI*.

JAVA Sea, that part of the East Indian sea, which lies between the island of Java to the south, Sumatra to the west, the islands of Banca, Billiton, and Borneo to the north, and the island of Celebes to the east.

JAVAT, or *TSCHAVAT*, a town of Persia, in the province of Schirvan, at the union of the Aras and the Kur; 45 miles S. of Scamachie. N. lat. $39^{\circ} 55'$. E. long. $48^{\circ} 10'$.

JAVELIN, a kind of spear, or half-pike, used by the ancients both on horseback and on foot.

It was five feet and a half long; and the steel wherewith it was headed, had three sides, or faces, which all terminated in a point.

The javelin match was one of the Gymnastic exercises among the ancients, and consisted either in throwing a stone, or a dart, or something else, with the most address, and to the greatest distance. Plato (*De Leg. l. viii.*) admitted two sorts of "Jaculations," the first called *τοξικον*, and the other *ακονιστικον*; and Galen informs us, that Apollo and Esculapius were the inventors of them. The Latins translated the first by the word "Sagittatio," and the second by that of "Jaculatio." In those exercises they equally employed either a bow or a sling, or another instrument, which they made use of for hanging to the arrow a thong which they held in their hand, to take the more steady aim.

JAVENBY, in *Geography*, a town of Sweden, in West Bothnia; eight miles S. of Pitea.

JAUER, a principality of Silesia, bounded on the N. by the principalities of Glogau and Sagan, on the E. by Lignitz and Schweidnitz, on the S. by Bohemia, and on the W. by Bohemia and Lusatia. It is mountainous and covered with wood; and it yields pit-coal and mill-stone. The mountains contain various ores, with numerous mines of iron and copper. The warm baths of its mineral springs are much frequented. It has 12 towns, and several large villages, which contain 200 families and upwards; and among their inhabitants are artificers, particularly weavers, whose manufactures are purchased for exportation. Its earthenware is much esteemed. Jauer, its capital, is situated 16 miles N. of Schweidnitz. N. lat. 51° . E. long. $16^{\circ} 18'$. Its other principal towns are Hirschberg, Lowenberg, and Bunslau, which give names to districts.

JAVERDA, a town of Hindoostan, in Dowlatabad; 10 miles S. of Calberga.

JAUIA, a city of Peru, famous for its manufacture of woollen cloths, and mines of silver.

JAVIE, LA, a town of France, in the department of the Lower Alps, and chief place of a canton, in the district of Digne. The place contains 130, and the canton 2401 inhabitants, on a territory of 75 kilometres in 10 communes.

JAUESMOW, a town of Hindoostan, in Oude; 15 miles N. of Corah. N. lat. $26^{\circ} 25'$. E. long. $80^{\circ} 46'$.

JAULDOE, a town of Bengal; 142 miles N.W. of Calcutta. N. lat. $23^{\circ} 23'$. E. long. $86^{\circ} 7'$.

JAULNO, a town of Hindoostan, in the circar of Aurungabad; 28 miles N.E. of Aurungabad.

JAUMS, among *Carpenters*, denote the door-posts, as also upright posts at the end of window-frames.

JAUMS, among *Bricklayers*, &c. the upright sides of chimnies, from the earth to the mantle-tree.

JAUNDICE, in *Medicine*, from the French *jaunisse*, (which again is from *jaune*, yellow,) a disease which is principally characterized by a yellowness of the skin over the whole body, and of the coats of the eye.

The appellation of *Aurigo* has been also given to this disease, from *aurum*, gold, in allusion to the yellow colour of the skin. The Romans called it *morbus regius*, or the royal disease, and *morbus arcuatus*, or *arguatus*, the origin of which names has afforded matter of dispute to the etymologists, who have not come to any satisfactory conclusion on the subject. Celsus believes that it was called *regius*, because it requires rich or royal fare to cure it. And the term *arcuatus* is said to have originated from the various colours of the skin resembling those of the rainbow. By the Greeks it was denominated *ικτερο*, *icterus*; whence also *icteritia*. Sauvages has adopted this last as the title of the sixth order, of his tenth class of diseases, understanding by "icteritia" (couleurs depravées) morbid changes of the complexion, and denoting jaundice by the term *Aurigo*. See his *Nosol. Method.*—Also, Van Swieten Comment. Aph. 918.—And Celsus, lib. iii. cap. 24.

Jaundice is marked by a yellow colour of the whole surface of the body, which is first seen, and is most conspicuous, in the tunica conjunctiva, or white part of the eyes, and at the roots of the nails. The urine is thick, of a deep yellowish brown colour, and tinges linen and other white substances, immersed in it, of a yellow hue. The bowels are often costive, but sometimes loose; and the stools are commonly of a very pale and clay-like appearance both in consistence and colour, from the absence of bile, and have not the usual fæulent smell. This disease is accompanied with a sense of much lassitude and languor, and a great inaptitude to exertion; with lowness of spirits, and a feeling of pain and tension, or weight and oppression about the præcordia; there is also frequently much anxiety, and some degree of difficulty of breathing, as well as a troublesome sense of itching over the skin, unattended by any eruption. Many symptoms of indigestion are generally present; such as nausea, vomiting, flatulency, and eructations, and loss of appetite: solid food tastes bitter in the mouth of some patients; and in some states of the disease hiccup occurs, and occasional paroxysms of rigour or chilliness. The pain is sometimes extremely acute in the epigastrium, or pit of the stomach, or in the right hypochondrium, especially during the passage of a gall-stone. The state of the pulse varies much; in general it is somewhat quicker than natural; but in some cases, and particularly under the circumstance just mentioned, it is slower. There is a popular notion that all objects appear of a yellow colour to patients labouring under jaundice; and, indeed, Galen, Hoffmann, Boerhaave, and Sydenham, all assert that they have occasionally witnessed that circumstance. But, on the other hand, Dr. Heberden, and other physicians of much observation and experience, have never found such a change of vision in any patient, nor have we ever met with any living practitioner by whom it had been detected. It is not, indeed, an impossible case, particularly where the disease has been of very long continuance and great intensity, when, should the cornea or humours of the eye become impregnated with bile, the light would pass through a yellow medium, and objects thus be tinged of that colour. But these parts are not usually found impregnated with bile.

The symptoms of jaundice originate from the mixture of bile

JAUNDICE.

bile with the circulating blood. In its ordinary state the blood contains no bile, nor any other of the secretions, such as urine, saliva, &c.; but the bile is generated from the blood, by a different combination of its parts, which is produced by the action of the vessels of the liver. When thus generated or secreted, as the term is, the bile is conveyed to the intestines by a duct which opens into the *duodenum*, or upper part of the alimentary canal. Branching from the middle of this duct, however, is another duct, which leads to the gall-bladder, into which the bile regurgitates. This is called the *cystic* duct; and that part of the duct of the liver above the branching off of the cystic duct, is called simply the *hepatic* duct: but the part below, or between this and the intestine, being the common channel for the bile from the liver, and for that which had regurgitated into the gall-bladder, is called the "common biliary duct," or *ductus communis choledochus*. Thus much it seemed necessary to state, in order that our future observations may be understood. For a minute account of the structure of the parts, see LIVER.

Now, after the bile is secreted, if the hepatic, or the common duct be obstructed, so that the passage of the bile into the intestine be prevented, it is forced back into the liver, and is taken up by the absorbent vessels, and carried into the mass of the circulating blood, in the serum of which it is dissolved, and thus gives it its own yellow colour. The blood, thus tinged, carries the dye with it to every part of the body, and hence the general hue of jaundice is produced. It would seem, however, that the bile, in a liver distended by obstruction of the ducts, is not only taken up by absorption, but is also forced into the mouths of the hepatic veins, according to the observations of Dr. Saunders and Dr. Powell. For both these gentlemen have witnessed the presence of bile in the thoracic duct on dissection; and Dr. Saunders found the serum of the hepatic veins in a dog, in which jaundice had been a short time before produced by a ligature on the common biliary duct, evidently more loaded with the colouring part of bile, than that serum in the other veins of the body. (See Saunders's Treatise on the Structure, Economy, and Diseases of the Liver. Powell's Obs. on the Bile and its Diseases, &c. p. 56.) When the bile reaches the circulation, the intensity of tinge which different parts receive will be in proportion to their vascularity, and the quantity of colouring matter thus carried to them; or to the natural hue of the part being more or less calculated to shew it, as in the eye and white of the nails. All the solid parts of the body, except the medullary substance of the brain, as some have affirmed, even the bones themselves, the fat and the cartilages, have been observed to be deeply tinged of a yellow colour. The secreted fluids are generally also deeply tinged. In cases of some duration, the perspirable matter is coloured, so likewise is the saliva, which has a very bitter and bilious taste: but the urine is much more highly impregnated with bile, and more speedily than any other of the secretions. Indeed the milk is the only exception which is made by authors; for the affection is supposed to extend even to the semen. (Van Swieten.) As we have already stated, however, poetic licence seems to have got the start of observation, in affirming that the bilious tinge extends to the humours of the eye, which has not been detected by modern inquirers.

"Lurida præterea spectant quæcunque tuentur
Arquati,"

Lucret. lib. iv. v. 333.

is probably without any foundation, as well as Shakspeare's assertion to the same purport. (See Heberden, Med. Transf.

vol. ii. p. 132.) The fluids, which are often preternaturally collected in the cavities of the body, as in those which constitute the varieties of dropsy, and those which are accumulated in bladders upon the surface, in consequence of the application of blisters, or other acrid matters, to the skin, are also found tinged with bile; and so likewise is that fluid which, under some circumstances, is collected in the ventricles, and which, in other respects, differs materially from the effusions into other cavities. Powell, loc. cit.

It is generally stated that costiveness attends the jaundice, in consequence of the want of bile, which is believed to be the principal stimulus to the intestines. But Dr. Heberden justly remarked, that icteric patients are often disposed to have a purging, and that certainly neither of these states is peculiar to the disease: and Dr. Powell observes, that the greater number of patients, whom he has attended, have been rather purged than otherwise. He remarks, that the degree of the costiveness militates much against the notion, that it originates in a deficiency of bile in the intestines. "Supposing for a moment," he says, "that bile is the stimulus imagined, it acts with a definite force, exemplified in the daily occurrence of stools: now, under these circumstances, any common purgative stimulates the intestines still more, and produces more copious evacuations; but where bile is absent and there is costiveness, even the strongest purgatives fail of their effect, though, as far as their stimulating power goes, they must infinitely surpass any quantity of the bile itself. If, too, this deficiency was the sole occasion of so unpleasant a symptom, it might be thought that the bile of animals might be advantageously employed for its removal: but even this does not answer, nor has a scruple of inspissated ox-bile stimulated my own intestines to more frequent or copious discharges. Upon the whole, I think that costiveness ought not, in this case, to be attributed to absence of bile, and that bile is certainly not the stimulus which has been imagined." (P. 87.) This reasoning is by no means conclusive; but it puts the matter in a probable light.

Causes of Jaundice.—The causes which obstruct the passage of the bile out of the liver, are to be found in the various circumstances which can *obstruct, compress, or diminish the calibre* of the biliary ducts, particularly of the ductus communis. Under these three heads we shall treat of the individual causes of the disease for the sake of discrimination.

I. *Of Obstruction in the Biliary Ducts*, or of the causes which plug up those passages. The ductus communis is liable to obstruction from two causes, namely, from gall-stones, biliary calculi, or concretions, as they have been termed, and from a morbid inspissation or density of the bile.

1. *Gall-stones* are generally formed in the gall-bladder, and acquire their chief bulk there; but from what cause these crystallizations take place we are altogether unable to state. While they remain in the gall-bladder they are perfectly harmless; and when they are very small they readily pass with the cystic bile. The principal inconvenience, then, arises upon the accident of their being carried from the cyst into the narrow ducts. Biliary concretions are very frequently found in the gall-bladder, in the dissections of dead bodies, when no symptom has appeared during the life of the person to excite a suspicion of their existence.

When a gall-stone is impacted in the duct, a pain, which is often most acute and severe, so as to be hardly supportable, but sometimes moderate, is produced, and is often accompanied by shiverings, which afterwards occasionally recur. The pain is seated at the pit of the stomach, and seems generally to be confined to that point of the epigastric region which corresponds to the situation of the opening of the common

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common duct into the duodenum, and from this part it appears to dart through to the back: the pulse at the same time continues nearly as slow as is natural, and has none of the hardness attendant on inflammation. By an attention to the seat of the pain and this natural state of pulse, Dr. Heberden observes, that it is not difficult to foretel the outward yellowness in many cases, some days before it appears. The breath, during the continuance of the pain, becomes short and hurried; there is great general anxiety and restlessness, sometimes amounting to delirium, and at last great depression and fainting; the stomach is affected by nausea and reaching; and there are often irregular spasmodic twitches in various parts of the body. There are often profuse sweats, which are, however, sometimes absent; and they do not depend at all upon the shiverings, for they are sometimes present, when no shivering has occurred. These symptoms do not continue long in all their violence; for although the patient, during the passage of a gall-stone, is never free from some pain, yet it increases, by paroxysms, to a state of acute suffering, and subsides again into one of comparative ease, during which there is a sense of deep-seated soreness and fullness of the epigastric and right hypochondriac regions. The greatest relief from pain is experienced by bending the body forward upon the knees, in which position the relaxation of the abdominal muscles leaves the affected parts subjected to the least pressure. Another fit, perhaps of equal or greater violence than the first, then comes on, and alternates with another remission; this may occur several times in an hour; but sometimes the duration of the paroxysm is much longer.

At some early period of these attacks, the jaundice makes its appearance; and it continues for a considerable time after the violent symptoms have disappeared. When the concretion has passed, however, and the more urgent symptoms have ceased, the yellowness may soon be perceived to diminish in its intensity; but before it can entirely disappear, it requires that the whole quantity of the tinged serum be removed by a gradual operation of the excretory glands, and a fresh supply in a natural state be introduced.

The duration of the attack, including the whole time of the passage of the concretion, is as various as its intensity; sometimes a few hours, sometimes several days, or even weeks elapse, before it is expelled. In the former case, the passage is often so rapid as not to allow time for the jaundice to take place. The number and size of the concretions also vary much; sometimes the gall-bladder is filled with them; at other times there are not more than one or two: sometimes they are small and angular; at others large, and have a more regular surface. They have been sometimes seen nearly of the size and figure of the gall-bladder itself, so as almost to fill the whole cavity. These large concretions are less frequently the cause of jaundice than smaller ones; for, from their bulk, there is but little probability of their entering the *ductus cysticus*, and afterwards of obstructing the *ductus communis*: it is from calculi of smaller dimensions that such obstructions generally arise. It appears, however, that calculi of considerable bulk must have passed; for the *ductus communis* has been found, on dissection, enlarged to an inch in diameter; an instance of which was met with by Dr. Heberden. But concretions have passed during life of such a bulk as to occasion a doubt whether they escaped into the intestines by the natural canals, or made their way thither by a preternatural passage; as by the adhesion of the gall-bladder, in consequence of inflammation, to the duodenum or colon, after which ulceration had occurred, and opened a communication. Dr. Cheston, of Gloucester, some years

ago met with a case where a gall-stone of unusual magnitude passed during life, and the patient recovered. Some years afterwards she died of another complaint; and on examination, it appeared that this large gall-stone had made a preternatural passage through the gall-bladder into the intestine. Mr. Cline has an instance of the same kind in his collection of anatomical preparations, at St. Thomas's hospital.

It would be foreign to the purpose of this article to enter into a minute account of the varieties of appearance, and the chemical properties of the different biliary concretions. Upon these topics the reader will find some observations under the head of *BILIARY Calculi*; and he will find a most ample investigation of the whole subject, in Dr. Powell's "Observations on the Bile and its Diseases," from page 105 to 133.

The chief circumstance which seems to give rise to the formation of these concretions in the gall-bladder and bile ducts, is a life of indolence and inactivity; it matters not whether it may have been passed amid the luxuries of wealth, or the hardships of poverty; and if the disorder be more common in the former situation, it is perhaps because necessity compels the subjects of the latter to more personal exertion. Hence these concretions are comparatively more frequent in women than in men; those men who are engaged in literary pursuits are very liable to them; and in either sex they are most common after the active period of life is past. Haller noticed the frequency of their occurrence in criminals, whose death had been preceded by long confinement. (*Opuscula Patholog.*) They are often found in the gall-bladders of oxen, which have been stalled during the winter months; and Dr. Powell believes that they occur in a larger than common proportion of maniacs who have been long confined. Dr. Saunders explains this influence of a sedentary life on the bilious secretion, by observing that the excretory powers of the liver depend but little upon any action which the biliary ducts can perform, as they possess a very small degree of irritability; but are assisted principally by the agency of the diaphragm and abdominal muscles, and the peristaltic motion of the intestines; and more especially from the agitation which the hepatic system undergoes during bodily exercise. The want, therefore, of a degree of exercise, sufficient to assist the biliary ducts in their excretory function, must necessarily lay an ample foundation for morbid affections of the bile. And the necessity of this external aid to the perfect action of the liver, seems more obvious from the circumstances of its venous circulation, which is always more languid than in those secretory organs, where the fluids are kept in a state of more rapid motion by arterial impulse.

It is commonly supposed that the biliary concretions are protruded from the ducts by the contractile power of the ducts alone. The truth of this opinion, however, Dr. Pemberton has questioned; and he maintains, that the gall-stone is propelled by the accumulating bile behind it, which at the same time pushes it forward and distends the duct. For, in the first place, the duct, he affirms, is always found contracted before the gall-stone; whereas, if the concretion were protruded by the contractile power of the duct, it ought to be contracted *behind* it. In the second place, opium and blood-letting are employed as relaxants and antispasmodics, and successfully: but this relaxation would rather retard than expedite the passage of the calculus, if its protrusion were the result of the contractile power. The consideration is, therefore, of practical importance. See Pemberton on *Dis. of Abdominal Viscera*, p. 55, *et seq.*

It may be added, that excessive vomiting and violent exercise, which have given rise to jaundice, operated proba-

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bly by forcing concretions from the gall-bladder into the ducts; and that there is an instance on record, in which jaundice arose from the seeds of gooseberries, which were found in the extremity of the common duct, as it enters the duodenum. Saunders.

2. The canal of the ductus communis choledochus may be obstructed or plugged up by the secretion of bile of a *morbid density* and tenacity, or by the *infiltration* of it in the gall-bladder. Dr. Saunders, speaking of the appearances that have been observed on dissection, says, "the bile has been found of a very viscid and pitchy consistence, especially in the gall-bladder; passing from the cystic to the common duct, and thereby perhaps resisting the passage of the more fluid hepatic bile, which would otherwise flow freely into the duodenum." The colour of this dense and infiltrated bile is still yellow, according to Dr. Powell, who states, that it does not seem to block up the large ducts, nor their entrance into the duodenum, but rather accumulates in the liver itself, the deviation from a state of fluidity rendering its passage through the smaller canals difficult. He conceives that this state of the secretion is connected with the use of spirits. Loc. cit. p. 75 and 145.

II. *Compression of the Biliary Ducts.*—The passage of the bile into the intestines may be also impeded by the various circumstances under which the common duct, or the hepatic duct is placed in a state of compression; of these we may mention the following:

1. *Posture.*—All persons, who are engaged in sedentary occupations, yield very generally to a curved posture, which, independently of the more remote effects of such modes of life, has seemed sufficient to produce jaundice. It is a well known fact, at least, that under such circumstances the disease is particularly frequent. Dr. Powell remarks, that in the necessary attention to anatomical dissection, which is given by young men in their preparation for the profession of physic, it is by no means uncommon to find attacks of jaundice, and that too at so early a period of their confinement, as can scarcely admit of the supposition that this was the chief exciting cause; and in some cases of literary study the same fact is observed: now the only circumstance in common in these two situations, is the flexure of the body forwards. In such a posture, the gall-ducts are obviously liable to suffer constant compression between the liver and the intestines and other adjoining parts.

2. This compression may be also occasioned by the gravid uterus, in pregnancy, towards the latter periods of which jaundice occasionally occurs. Dr. Powell, however, is inclined to refer the jaundice, produced under such circumstances, to the plethoric state of the liver, in which the accumulation of blood in that viscus itself is the cause of the compression of the ducts; more especially because blood-letting, and other evacuations remove it.

3. *Tumours* of the liver and of the neighbouring viscera are among the common causes of the most permanent and severe jaundice. A mere congestion of blood or turgescence of the vessels throughout the liver, as just hinted, from whatever cause produced, may be easily supposed to press upon and block up the biliary ducts, and thus occasion the absorption of that bile, to the secretion of which it ministers. Thus *hepatitis*, or inflammation of the liver, is sometimes accompanied by jaundice; and would probably be more frequently so accompanied, were it not in general confined to a small part of the viscus, or to its investing membrane. Thus, after the intermittent fevers of this country, and the analogous remittents of warmer climates, a

jaundice often comes on towards the conclusion, which has been considered as forming no very unfavourable prognostic; for there does not generally appear to be any other disease of the liver, in such cases, than an increase of its size, with great accumulation of blood through its substance. Dr. Powell mentions the case of a woman who died of consumption, and whose lungs were found to be almost one mass of ulcerated tubercle; within the last three days of her life, jaundice had come on to a very intense degree. But, on dissection, the ducts were found free, and the gall-bladder empty, and no external tumour was discovered; but in the liver there seemed to be a great accumulation of blood; it was much increased in size, had a loose texture, and was in every part deeply tinged with bile. Loc. cit. p. 72-3.

Scirrhus tumours of the contiguous parts, as of the head of the pancreas, of the pylorus, and even of the liver itself, scrofulous enlargements of the lymphatic glands in the capsule of Glisson, and steatomatous swellings of the omentum, are often so situated as to obstruct mechanically the passage of the bile into the intestines; tubercles of the liver have sometimes also operated as extraneous causes, and, from their local situation, stopped the natural course of the bile. But the liver is often much enlarged by collections of large tubercles, which yet leave, in their interstices, a perfect freedom for the action of the vessels and the passage of the biliary ducts; and scirrhus of the liver is not usually a general disease, but is confined to particular spots, which are often out of the way of the biliary passages; so that it has often been found, on dissection, to have made considerable progress without inducing jaundice.

4. Distension of the large intestines by air, which constitutes the disease called *tympanites*, is often accompanied by jaundice. Such a distension, arising to a certain point, must impede the influx of the bile into the duodenum, both by its pressure upon this bowel itself, and upon the biliary ducts; and the jaundice seems to take place, under such circumstances, only when the distension is very considerable, and is therefore to be deemed a very unfavourable symptom. In a case, mentioned by Dr. Powell, the accumulation of air was so great, that, very speedily after the appearance of jaundice, the *cæcum* was burst by it, and the patient of course destroyed.

III. *The calibre of the biliary ducts being diminished*, independently of internal stoppage or external pressure, jaundice will equally ensue. Two causes of this kind are mentioned by medical writers; but it is probable that neither of them are of very common occurrence.

1. *Spasm* of the common duct, or a spasmodic constriction of the duodenum itself, and consequently a closing of the aperture of the duct, are particularly mentioned by Dr. Cullen among the causes of jaundice, and Dr. Powell deems the fact well established, although it has often been denied. In some way or other, however, jaundice frequently concurs with diseases that are called spasmodic. Thus it is said by Sydenham to come on occasionally during hysterics; and it has been observed to follow violent fits of anger, and other emotions of the mind. Dr. Heberden denies the accuracy of Sydenham's observation, in respect to hysteria, both from his own observation, and the authority of many other practitioners. With respect to the influence of the passions, Dr. Saunders remarks that anger not only augments the quantity of bile secreted very considerably, but likewise vitiates it: hence it is, that, being carried into the duodenum in large quantities, and regurgitated into the stomach, it produces the same effects as an emetic: and hence

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probably the term *choleric*, as applied to passionate people. If the *ductus communis* do not transmit it as fast as it is secreted, and the gall-bladder is so full that it cannot receive the excess; then it will be forcibly returned upon the hepatic system, and, by entering the blood-vessels, produce jaundice. (Saunders, p. 235.) Some have supposed that, during the general commotion of the passions, a gall-stone may have been pushed from the bladder into the duct, and thus produced jaundice; but the whole attack has often been too transitory, and too free from the general symptoms of the passage of a gall-stone, to allow of such a supposition. (Powell, p. 70.) The symptoms of spasm, affecting the parts in question, are, however, generally considered as being similar to those of the passage of a concretion. (Pemberton, loc. cit. p. 49.) So that, on the whole, the explanation which Dr. Saunders has given, of the influence of the passions in producing a temporary jaundice, appears to be the most probable.

2. *A thickening of the coats* of the biliary ducts, by which their calibre must be diminished, is mentioned among the less common causes of jaundice. (See Morgagni De Causis, et Sedibus Morborum, Epist. xxxvii. art. 10 who mentions an instance of the total obliteration of the common duct.) Dr. Saunders remarks that this contraction of the canal of the duct, is produced by the extension of diseased structure, originally produced in the stomach by the abuse of spirituous liquors, to the biliary ducts. "In the dissection of those who have been intemperate dram-drinkers, the diseased structure may be traced," he says, "from the stomach along the course of the ductus communis, and I have frequently seen these ducts so contracted and thickened, that they could not transmit bile." A similar effect, from inflammation of the liver extending to the gall-bladder and ducts, which often lays the foundation of an incurable jaundice, has been observed by Dr. Pemberton: the inflammation of the duct may be removed, he observes, but the thickening remains, a permanent evil. Dr. Darwin, however, imagines, that a temporary jaundice may be occasioned by an inflammatory thickening of the membrane lining the ducts, analogous in its kind to that of the membrane of the nose in catarrh, and which, like it, soon ceases, and the jaundice will go off. (Zoonomia, vol. ii. p. 138.) The truth or falsity of this opinion it is not in our power to ascertain.

In addition to the series of causes already detailed, arising from obstruction to the passage of the bile into the duodenum, it has farther been a question, whether any obstruction to its discharge from the bowels, after it has cleared its appropriate ducts, may not likewise occasion its absorption into the system, and therefore produce jaundice. It would appear, from an experiment of M. Portal, that this may happen. He passed a ligature round the intestine of dogs, a little below the opening of the ductus communis choledochus, and observed that, in five or six hours afterwards, their eyes acquired a yellow tinge; and upon examining the lacteals, he found them filled with bile. (Mem. de l'Acad. des Sciences, ann. 1777.) In some of the cases of obstinate costiveness accompanied by jaundice, that are on record, it is probable; therefore, that the jaundice was a symptom, rather than a cause, of the costiveness.

This seems to be the case, in the slight jaundice of infants, which speedily vanishes when the bowels are unloaded.

Dr. Powell mentions a paralysis of the gall-bladder as one of the causes of jaundice. In this case, as in the urinary bladder, the powers of contraction are lost from overdistension, and the accumulation of bile is said to have be-

come so great, as to produce a tumour externally, with an evident fluctuation, which has induced the surgeon to puncture it, under an idea that the collection was pus. It is not easy to conceive how jaundice should be induced, under these circumstances, except by absorption from the inner surface of the gall-bladder itself.

The prognosis, in jaundice, must be obviously very different in different instances, according to the nature of the obstruction upon which it depends. In jaundice arising from gall-stone, or spasm, the prognostic is favourable; for, in the latter case, the spasm will assuredly cease; and, in the former, if the stone is small enough to enter the duct, it is most likely that it will pass its whole length, inasmuch as the canal at the entrance is of less diameter, than when it unites with the hepatic duct to form the ductus communis choledochus. If, therefore, jaundice has arisen suddenly in young and vigorous habits (even though accompanied with much pain), and is unattended with fever, and other unfavourable circumstances to be mentioned, it is seldom of long duration, and may be effectually removed. The itching of the skin, which sometimes subsides after a few days, Dr. Pemberton observes, often returns a day, or even two days, before other evident proofs of the removal of the obstruction; so that he considers such a recurrence of the itching as a favourable symptom. A bilious diarrhoea coming on, implies the removal of the obstruction, and must therefore be regarded as conclusive with respect to the recovery of the patient. A small variation of the yellowness cannot be relied upon as a symptom of convalescence; since the colour of the eye and skin often undergoes slight changes, even during the time when the obstruction remains the same. Pemberton, loc. cit. p. 61.

Among the unfavourable symptoms may be reckoned a continuation of the intenseness of the yellow colour in the eye, the pain of the stomach remaining equally acute, and confined to the same spot; and an increase of nausea, while the stools and urine continue to retain the unnatural colours before-mentioned. The appearances are very unfavourable, if, with the violent pain, there is also a quick pulse, loss of flesh and strength, with occasional watchfulness and melancholy; under these circumstances, the patient becomes subject either to profuse sweating or hæmorrhagy. These symptoms generally mark the presence of some fixed disease in the viscera, and the disease frequently terminates in a confirmed dropsy of the belly.

It must not be omitted, that jaundice is a disease into which the patient is very liable to relapse, after every appearance of recovery.

Diagnosis.—It is extremely important, with a view to the proper treatment of jaundice, to distinguish from which of the causes of obstruction before-mentioned the biliary ducts are impeded. Our conclusions as to the event of the disease must also depend entirely upon our knowledge of the nature of the obstruction. We have in some measure anticipated the diagnostic symptoms, in treating of the causes; but it cannot be too carefully observed, that where gall-stone, or spasm of the ducts, is the cause of the jaundice, there is most acute pain in the pit of the stomach, attacking suddenly, commonly remitting and recurring in paroxysms, and often accompanied by vomiting; but at the same time the pulse continues in its natural state, both in respect to slowness and softness, which implies the absence of inflammation. When shiverings occur, it may be observed that they come on *after* the pain has continued some time, and do not precede the pain, as is the case with those shiverings which attend inflammation.

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Jaundice arising from compression of the biliary ducts, by tumours of the neighbouring organs, may be distinguished by the pain not having come on suddenly; by its being less acute and varying little in degree; by the circumstances of the general health, when the jaundice has been preceded by other diseases of long continuance, by wasting of the flesh and strength, and is accompanied by soreness or obvious hardness in the hepatic or epigastric region, and by an increased velocity of the pulse, and when it occurs in the middle or advanced period of life. Even when the jaundice has subsisted long without any intermission, (Dr. Cullen remarks,) and without any pain in the epigastrium, an external compression is to be suspected. When to these circumstances a disposition to dropy is added, there can remain no doubt as to the existence of morbid enlargement of some of the viscera, and of the incurable nature of the disease.

The *chlorosis*, to which young women are extremely subject, puts on, to a superficial observer, the appearance of jaundice; and, indeed, the whole body assumes, in some cases of this disorder, so much of a yellow colour, as might lead a less careful observer to suspect the presence of bile. But in all such cases, the original whiteness of the eye remains, or is even increased to a pearly whiteness, and the urine remains of its natural colour, assuring us that the circulating fluids hold no bile in solution.

Cure of Jaundice.—As the cure of jaundice consists essentially in removing the obstruction to the free egress of bile from the liver, the treatment must vary according to the nature of the obstructing cause; and while measures are adopted, with a view to remove these causes, other collateral indications, such as the alleviation of pain, the diminution of inflammation, if any be present, and the support of the patient's strength, will require to be fulfilled.

When the symptoms lead us to infer, that the jaundice arises from the impaction of a gall-stone in the duct, the object of remedies will be to facilitate its passage into the intestinal canal. We know of no certain and immediate means of expediting the passage of biliary concretions, which is generally a work of time, depending upon the gradual dilatation of the biliary duct. It proceeds, however, faster or slower upon different occasions; and therefore the jaundice, after a various duration, often ceases suddenly and spontaneously. This circumstance has given rise to a belief in the efficacy of a number of remedies, many of which are perfectly inert, and others cannot be supposed to exert any effect upon the passage of a gall-stone. Some of these, indeed, seem to have been recommended for the cure of jaundice, in consequence of their *yellow* colour; such as saffron, the yolk of raw egg, &c.; in the same way as the root of madder, which is *red*, has been popularly used as an emmenagogue. Of such remedies it is unnecessary to give any farther account.

But although no immediate evacuation of the obstructing cause be within the power of medicine, yet that process may be facilitated by those means, which are known to abate increased action of muscular fibres, and to diminish irritability; *i. e.* by anti-spasmodic and narcotic medicines. Opium is one of the most effectual medicines of this class; and the benefit, resulting from its administration, seems to confirm the theory upon which it has been recommended. It fulfils the two-fold indication of relaxing the spasm of the ducts, and alleviating the urgent pain. It is not enough, however, to administer small or even ordinary doses of this medicine, which, in proportion to the severity of the pain, will produce the less effect. The quantity of opium, as Dr. Pemberton

enjoins, ought to have no limit but the absolute alleviation of the pain; and till that object is attained, the patient should take a grain of solid opium, or twenty-five drops of the tincture of it every hour. (Pemberton, *loc. cit.* p. 52.) Or, as is recommended by Dr. Powell, which we believe to be more efficient, he should take a large dose, say two or three grains, in the first instance, and follow this up by smaller doses, at short intervals, which will prolong the powers of the medicine, and sometimes the concretion will pass, while the patient is under its influence. (Powell, p. 155.) A dose of fifty drops or a drachm of tincture of opium, in a glyster, will frequently produce immediate relief.

The spasmodic constriction of the duct, and the excessive pain attendant upon it, may be also alleviated, and the passage of the concretion facilitated, by the use of warm fomentations, applied to the region of the stomach and liver, and still more effectually perhaps by immersion in a warm bath; the temperature of the bath should, however, be properly regulated, as well as the continuance of the immersion. As the object, in this case, is to obtain the soothing and relaxing effects, and not the corroborant operation, of the warm bath, its temperature should be from 100° to 110° of Fahrenheit's thermometer, either on the first immersion, or by the application of subsequent heat; and the immersion should be continued till an incipient faintness is produced, which, whether it take place after a longer or a shorter time, is the best criterion to regulate its duration; for where this has not ensued, the bath has not appeared to produce any beneficial effect. Powell.

Several physicians, and Dr. Cullen among the rest, have considered the action of vomiting as the most probable means of assisting the passage of a gall-stone through the biliary duct. This action, Dr. Cullen says, "by compressing the whole abdominal viscera, and particularly the full and distended gall-bladder and biliary vessels, may contribute, sometimes gently enough, to the dilatation of the biliary duct." (First Lines, § 1825.) Hence *emetics* have been frequently recommended for the cure of jaundice arising from gall-stones. Dr. Heberden, apparently by a dereliction of his usual rational caution, while he admits that vomiting is often an urgent symptom of jaundice, from biliary concretion obstructing the duct, and that the action may even be supposed to contribute to lacerate the duct, if the concretion be strongly impacted in it; yet he maintains that experience had taught him that vomiting, excited while the pain was intense, rather quieted than aggravated the pain, and never brought it on. (Medical Tranfact. of the Coll. p. 160.) He considers it, therefore, as a judicious practice, whether the patient have a vomiting or not, to order an emetic, either at first, or as soon as the intenseness of the pain has been alleviated, and occasionally to repeat it, watching at the same time its operation, and checking it by an opiate, if the straining continue too long, or be too violent. It is true, that no decided injury is stated to have been produced by such an exhibition of emetics; yet the theory of their operation, by mere mechanical concussion, seems very problematical, and experience, on the whole, does not attest any very clear proofs of their efficacy. Dr. Cullen admits that gentle emetics alone should be given; and suggests that, where, by the long continuance of the jaundice, it may be suspected that the size of the concretion then passing is large; or more especially when pain attending the disease gives apprehension of inflammation, it may be prudent to avoid vomiting altogether. On the whole, the practice must be deemed precarious where the disease

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is severe, and uncalled for where it is mild. When the obstruction is occasioned by inspissated bile or mucus about the mouth of the duct, vomiting might remove this, and thus cure the disease; but a purgative, which is less precarious in its operation, is perhaps equally efficacious.

The use of *purgatives*, indeed, has been recommended by some writers, with a view to aid the expulsion of gall-stones from the biliary duct; but the most experienced agree that little benefit can be expected to accrue from the use of cathartics (except when the bowels are very costive), until the concretion shall have escaped into the intestine. There cannot be a doubt, however, that slight cases of jaundice, depending perhaps upon the clogging of the aperture of the duct with inspissated bile, or a very small calculus, are speedily removed in many cases by cathartics. From the notion that constipation arose from a deficiency of bile in the intestines, the *bitter* purgatives were particularly recommended in jaundice; such as aloes, infusion of chamomile with tincture of aloes, or colomba with rhubarb and soap, &c. As soon as the pain is relieved by the remedies already enumerated, and more especially when the relief is complete and sudden, implying the escape of the concretion into the duodenum, it would seem to be advantageous to preserve an open state of the bowels for some days, not only for the purpose of carrying the concretion out of the body, but to assist in expediting the discharge of the bile tinging the serum of the blood, and the healthful renewal of the latter. The choice of the purgative for this purpose would seem to be not very material; castor oil, moderate doses of calomel succeeded by neutral salts or rhubarb, &c. repeated every third day, may answer the proposed end.

When there is complete evidence, from the colour of the stools, &c. that the obstruction is removed from the gall-duct, little farther aid from medicine, than the means just stated, would seem to be requisite. Perhaps, however, the restoration of the functions of the stomach and adjoining organs may be accelerated by the administration of some aromatic bitter, such as an infusion of cascarrilla or gentian; or of the absorbent or antacid medicines, when heart-burn or pain of stomach remains.

Such is the treatment to be adopted, whether the jaundice arise from spasm merely, or from gall-stone, or inspissated bile, stopping the duct. Except in the case of gall-stone, the disease will soon disappear. But in the latter instance, it often happens that the concretion, either from its magnitude or from its angular form, produces inflammation of the duct. It then becomes a more serious complaint, and requires the use of blood-letting, blisters, and purgatives, as in other visceral inflammations. The supervention of inflammation is principally marked by the increase in the velocity and hardness of the pulse. The tendency to inflammation, indeed, in strong and plethoric habits, from such an irritation in a membranous part as the passage of a biliary concretion excites, is so great, that experienced physicians recommend the employment of blood-letting, by way of precaution, in persons of moderate vigour, even before the pulse is quickened, or febrile symptoms have supervened; and deem it absolutely requisite, when the pain is severe and the slightest degree of feverishness is present. (Cullen, loc. cit. § 1824.) One full bleeding, produced from a large orifice in a vein, to the extent of 18 or 20 ounces, in a strong person, will be more efficacious than twice the quantity taken at repeated times.

It must here be observed, that various attempts have been made to discover medicines which might act upon the biliary concretions as solvents, while they remain in the gall-bladder or biliary ducts. Several substances have been found to

dissolve the most common ones when directly applied out of the body, especially ether, oil of turpentine, spirit of wine, and the alkalies; and the combination of the two former, as well as solutions of essential oils in alcohol, have been administered internally both in France and this country, and their efficacy strongly attested. (See two papers on this subject, by M.M. Durande and Maret, in *Les Nouveaux Memoires de l'Acad. de Dijon*. tom. i. and iii. &c. White's *Essay on Diseases of the Bile*.) But it is to be recollected, that it is altogether impracticable to make a direct application of these substances to calculi in the biliary passage; and we have no facts to prove that they can be carried into the gall-bladder, through the medium of the circulating-blood, so little changed as to preserve any sensible degree of solvent power. Dr. Saunders, however, affirms that the alkalies have been found by experience, when taken for some continuance, to be successful against biliary concretions; and it has been generally stated, that stalled oxen get rid of their biliary calculi when turned out to graze in the spring, which, if it be true, implies the possibility of some change being effected upon calculi already formed. This statement induced some practitioners, who ascribed the effect to the new food which the cattle obtained, to give *grafs*, or the juice of it, to their human patients affected with jaundice. Van Swieten affirms that he cured a poor labourer by prescribing a decoction of *grafs*, sweetened with honey, for his common drink. (Comment ad Aph. 950.) But these practitioners did not recollect that a free muscular exercise in the open air was an important point in the alteration of the circumstances of the cattle just mentioned; and whether we look to the sedentary habits of those who are more particularly disposed to jaundice, or to the beneficial effects of exercise, especially on horseback, which experience has ascertained, in preventing the stagnation and viscidness of the bile (see Saunders, p. 255. Powell, p. 161.), we shall not be disposed to send our jaundiced brethren to graze for the recovery of their health.

Acids were long ago considered as beneficial in many cases of jaundice (Baglivi, *Prax. Med. lib. i. cap. 9.*); and the diluted *nitric acid* has recently been recommended in some diseases of the liver. Dr. Powell was hence induced to administer this acid to a patient who was subject to frequent attacks of jaundice from biliary concretions; and during the use of the acid for eight months he continued free from the disease. The writer of this article was induced to administer the nitric acid from the same considerations, and has witnessed the most decided efficacy of the remedy in several instances in which the disease speedily yielded to its influence again and again, after returning on desisting from its use. In one case, a young lady has experienced from it an invariable cure, and from the disposition to a recurrence of the jaundice has found it expedient to employ it almost constantly. It may be taken in the proportion of a drachm of the diluted nitric acid to a pint of distilled water, or of any vegetable infusion, daily.

In that state of the liver which produces jaundice towards the end of intermittent fevers, mercury is the best and only remedy; and calomel, in small doses, is the form under which, in this, and some other hepatic diseases, it seems to act most powerfully. Where scirrhus of the substance of the liver, or of the neighbouring organs, operates mechanically by its pressure upon the ducts, and occasions jaundice, it is more likely to prove the source of permanent mischief than any other cause, and our means of relieving it are less effectual. In the true tubercle of the liver, which begins with induration,

induration, and afterwards passes on to ulceration, the efficacy of any medicine is very doubtful; even mercurials, when given in large quantities, and under any form, have not seemed to produce any decided advantage. They are absolutely injurious, according to the observation of Dr. Saunders, when symptomatic fever takes place. The chalybeate waters are recommended by the last mentioned physician, as giving that tone and energy to the system so very defective in cases of jaundice.

When jaundice arises from a general congestion of the vessels of the liver, general blood-letting, or, if the circumstances of the constitution and strength of the patient forbid that, local bleeding by leeches, or cupping-glasses after scarification, or the application of blisters to the hypochondrium, will be useful, together with the exhibition of purgatives; and if it be admitted, that torpor of the intestinal canal, and a retention of bile or an accumulation of mucus in the duodenum can sufficiently obstruct the departure of the bile, and thus occasion jaundice, as it seems to do in young children, the employment of any active purgative will be adequate to its removal. Calomel and jalap are particularly well suited to this indication.

JAUNDICE, Black, was distinguished from the jaundice, properly so called, or *yellow* jaundice, by the ancients, when the skin of the patient became of a dark green hue. They conceived it to be occasioned by a mixture of melancholy, or black bile, with the blood, and to originate from disease in the spleen, which they conceived to be the organ in which the black bile was generated, or from corruption and putrefaction of the yellow bile. It appears to have been nothing more than an intense degree of the ordinary jaundice, when the skin becomes of a dark or bronze hue, to which this appellation was applied.

Horses are subject to jaundice as well as men. The farriers commonly call it the *yellow*s, and divide it, as we do the jaundice, into two kinds, the yellow and the black. The yellow kind is known by the creature's white of his eyes turning to a yellowish colour, and his tongue and lips also partaking of the same tinge, but in a smaller degree. In the black kind all these parts are tinged with a dusky or blackish colour. The common cure among the farriers is by means of an ounce of mithridate dissolved in two quarts of strong-beer, and given to the horse warm; and repeating this dose once in twelve hours, as long as the distemper continues.

JAUNDICE-BIRD, *idarus*, in *Ornithology*, a name by which several of the old authors have called the galbula, a bird of the turdus kind, very beautifully coloured all over with a gold yellow, but with black wings. See **ORIOLEUS Galbula**.

JAW, in Anatomy, the bone in which the teeth are lodged: there are two, an upper and a lower one. These are described in **CRANIUM**. The joint and muscles of the lower jaw are considered under **DEGLUTITION**.

JAW, Dislocations of. See **LUXATION**.

JAW, Fractures of. See **FRACTURE**.

JAW, Locked. See **TRISMUS** and **TETANUS**.

JAWATA, in Geography, a town of Japan, in the island of Nippon; 90 miles W.N.W. of Meaco.

JAWBERRYA, a town of Bengal; 21 miles N.W. of Calcutta.

JAWOR, a town of Lithuania, in the palatinate of Novogrodek; 48 miles S.S.W. of Novogrodek.

JAWOROW, a town of Poland, in New Galicia, celebrated for its warm baths; 25 miles W. of Lemberg.

JAXARTES. See **SIHON**.

JAY, GUY-MICHAEL LE, in Biography, a learned ad-

vocate of the parliament of Paris, who flourished in the 17th century, was at an early age profoundly skilled in the Oriental languages, and formed, at that period, the noble design of publishing a polyglott at his own expence. He carried the plan into execution, but it was with the expenditure of all his property. He might have reimbursed himself, and have also received an ample compensation for his long and almost unremitting labours, if he would have accepted the patronage of cardinal Richlieu, who was ambitious of a similar reputation to that obtained by Ximenes, for patronizing the Spanish Polyglott, but M. le Jay chose to reserve to himself all the glory of the undertaking. On account of his poverty he embraced the ecclesiastical life, and obtained a small deanery, but his income was very inadequate to his wants, till cardinal Mazarin made him a magnificent present of nineteen thousand livres. The king likewise granted him letters of nobility, and a brevet of counsellor of state as rewards of his learning, zeal, and disinterestedness. He died in the year 1675. His Polyglott is in ten volumes, folio: it contains the Syriac and Arabic versions, with their Latin translations, and the Hebrew Samaritan text of the Pentateuch, with the Samaritan translation of the same in Samaritan characters. The high price at which this Polyglott was offered for sale in England, induced Walton to publish a similar work, which is more complete and commodious, though not so handsome, as M. le Jay's. Moreri.

JAY, in Geography, a township of Ameriea, in Kennebeck county, and state of Maine, thus named in honour of John Jay, governor of the state of New York. It lies on both sides of Great Amerskoggen river, and includes the great bend which, from an easterly and westerly course, suddenly turns southerly in this township, and passes into Livermore, containing 430 inhabitants. The Indian name of this place was "Rochomekoe."

JAY, in Ornithology, is the English name of the **CORVUS glandarius**; which see.

JAYA, in Hindoo Mythological Romance. Jaya and Vijaya were two of the daughters of Daksha, son of Brahma. When Rama went forth to the wars of Lanka, the gods and demigods endowed and armed him with their potencies and weapons. These two sisters "of slender wait," as they are described in the Ramayan, brought forth a hundred weapons "missive and manual," wherewith to arm Rama and his compeers in their arduous conflicts with Ravana, the tyrant of Lanka.

JAYADEVA, in Biography, a celebrated Hindoo poet, whose lyrics, entitled "Gita Govinda," introduced to the literature of Europe by the elegant pen of the lamented sir William Jones, seem to give him a claim to an elevated rank in that species of compolition. The "Gita Govinda" is a pastoral drama, exhibiting the loves of Krishna (under the name of Govind) and his mistress Radha; and although apparently a mere voluptuous rhapsody of passion, and that not always devoid of grossness, embellished by exquisite touches of poetry, it is contemplated in a very different light by the enthusiasts of the Gokalaistha sect, or the exclusive adorers of Krishna. These persons can discover in the "Songs of Jayadeva," as the poem is called, a system of emblematical theology: the loves, apparently carnal, of Krishna and Radha, mean, they say, the reciprocal attraction between the divine goodness and the human soul; and in this manner the voluptuousness of the poem is explained and lost. Others of a more sober cast passionately admire the practical beauties of the Gita Govinda, without admitting it to be a composition exclusively spiritual. It is certain that a figurative mode of expressing the fervour of devotion obtained extensive prevalence in very early times. Among the Jews, Ma-

hometans, and Hindoos, striking examples can at once be pointed to; not to mention in this place the doctrines promulgated in the same glowing style by the illustrious Grecian travellers, Pythagoras and Plato, who, it may be safely asserted, derived many of their tenets, as well as peculiarity of expression, from the mytlics of India and Persia. See *Mystical POETRY*.

Jayadeva is believed to have lived anterior to the Christian era, and to have been born at the town of Cenduli, in Kalinga; but as there is a town of a similar name in Berdwan, the natives of it claim the glory of citizenship with the finest lyric poet of India, and celebrate in his honour an annual jubilee, passing a whole night in representing his drama, and singing his beautiful songs.

JAYADEVI, the consort of Vishnu, in an equivocal incarnation under the form of Jina or Jaina, as appears in some Hindoo writings. She is represented preaching to the females of Kari or Benares, the Jaina doctrine, that "all true religion consisted in killing no creature that had life;" a heresy, according to Brahmanical authors, which gained so much ground, as to render an incarnation of Siva the avenger expedient to resist it. This incarnation, they say, accordingly took place, in the person of a learned bigot named *Sankara*, which see.

JAYES, in *Geography*, a town of Hindoostan, in Oude; 30 miles N. of Manickpour.

JAYGONG, a town of Bootan; 25 miles N. of Beyhar.

JAYNA, a canton, parish, and river on the S. side of the island of St. Domingo; between this river and the Nigua is enclosed an extensive and fertile plain, which was formerly an abundant source of riches to the colonists. The quantity of pure gold that was dug from its cavities, its sugar, cocoa, indigo, and other plantations, paid duties to a greater amount than those now paid by all the Spanish part of the island. The inhabitants are wholly employed in the breeding of cattle or the washing of gold sand. Indigo grows wild here. Towards the source of this river, which at 250 miles from its mouth is not fordable, but crossed in canoes and skins, were the celebrated gold mines of St. Christopher's, near which Columbus erected the fort of that name. On this river there are also rich silver mines. The establishments in the plain of St. Rose, and those on the Jayna, are reckoned to contain 2000 persons.

JAYNAGUR, a town of Bengal, six miles N.E. of Mahmudpour. N. lat. 23° 28'. E. long. 89° 46'.—Also, a town of Bengal; 42 miles N. of Ramgur. N. lat. 24° 21'. E. long. 85° 53'.—Also, a town of Hindoostan, in Bahar; 15 miles N.N.E. of Durbungah. N. lat. 26° 33'. E. long. 86° 20'.

JAYPOUR, a town of Hindoostan, in the county of Orissa; 192 miles W.S.W. of Cattack. N. lat. 19° 5'. E. long. 82° 48'.

JAYSPIZ, a town of Moravia, in the circar of Znaym; 10 miles N. of Znaym. N. lat. 48° 57'. E. long. 15° 53'.

JAZAR, or JAZER, in *Scripture Geography*, a city beyond Jordan, given to Gad, and afterwards to the Levites. (Josh. xxi. 36. xiii. 25.) It lay at the foot of the mountains of Gilead, near the brook Jazar, which discharges itself into the Jordan.

JAZIRA, *Desert of*, a tract of Asiatic Turkey, extending along the Euphrates from Balis to Anbar. See *GEZIRA*.

JAZYGES, in *Ancient Geography*, a people of Scythia, or Sarmatia. Of these there were the *Jazyges Maota*, who occupied the northern coast of the Palus Maotis, and were destroyed in the 13th century by the kings of Poland; and also the *Jazyges*

Metanasta, who inhabited the angular territory formed by the Tibiscus with the Danube. They lived in the vicinity of Dacia, and are called by Pliny "Sarmates." The *Jazyges Basili*, or royal, were people of Sarmatia, joined by Strabo to the Jazyges on the coast of the Euxine sea. These advanced in process of time to the banks of the Danube, and penetrated to the other side of the Sarmatian mountains. They have been sometimes confounded with the Getæ and Dacians, on account of the resemblance that subsisted between them in their manners and mode of government. Ptolemy speaks only of the Jazyges Metanastæ, who were probably more considerable than any of the other Jazyges; and whose country was bounded on the N. by European Sarmatia, S. E. by the Sarmatian mountains, as far as mount Carpathus, and W. and S. by that part of Germany which extends from the Sarmatian mountains to the Danube, near Carpis, and thence by a part of this river to the Tibiscus; and E. by Dacia, from which it is separated by the Tibiscus. Towards the decline of the empire, this country was occupied by the Vandals, and afterwards became a part of the empire of the Goths. About the year 350 they were expelled by the Huns. It has since formed part of Hungary and of Galicia, and probably also of Bannat-Temeswar.

IBAGUE, in *Geography*, a town of New Granada, in the province of San Juan de los Llanos; containing about 400 inhabitants, one half of them being Indians.

IBALI, a town of European Turkey, in Macedonia, situated near Drino Nero; 65 miles W.N.W. of Akrida.

IBAR, or HIBAR, a river of European Turkey, which runs into the Morava; 20 miles N. Precop.—Also, a town of Servia; 20 miles N. of Novi-Basar.

IBARRA, JOACHIM, in *Biography*, born at Saragossa in 1725, became printer to the king of Spain, and died in 1785. He carried the typographic art to a degree of perfection which had been unknown in that country. He produced very fine editions of the bible, the Mozarabic Missal, Mariana's History of Spain, Don Quixotte, and Gabriel's Spanish Translation of Sallust.

IBARRA, in *Geography*, a town of South America, in the province of Quito; 45 miles N.N.E. of Quito. N. lat. 0° 25'. W. long. 77° 40'.

IBAROTI, a town of South America, in Paraguay; 130 miles E. of Aslumption.

IBAS, in *Biography*, bishop of Edessa, who flourished in the fifth century. He was a Syrian by nation, and appears to have been elected to the see of Edessa about the year 436. While he was a presbyter of that church, he wrote a letter concerning the council of Ephesus, and the condemnation of Nestorius, in which he was thought to favour the Nestorian doctrine. He was several times tried upon this charge, and obtained verdicts of acquittal. He was frequently harassed, and sent from one place of confinement to another, till, in the year 451, the council of Chalcedon pronounced his sentiments orthodox, and decreed that he should be restored to the dignity of which he had been deprived. Moreri.

IBBERVILLE, in *Geography*, a river, or a kind of natural canal of West Florida, which joins the Mississippi when it overflows, and forms a communication for vessels drawing three or four feet, from the Mississippi to the gulf of Mexico, eastward, through the lakes Maurepas and Pontchartrain. Its junction with the Mississippi is at the town of Manshack, in N. lat. 30° 17'.

IBBETSON, CAPE, a cape on the N.W. coast of Pitt's Archipelago. N. lat. 54° 4'. E. long. 229° 31'.

IBBETSONIA,

IBBETSONIA, in *Botany*, so named by Dr. Sims in Curtis's Magazine, p. 1259, after an ingenious writer on the structure and physiology of plants, in Nicholson's Journal, Mrs. Agnes Ibbetson. It is, however, the *Cyclopia* of Ventenat, a genus previously published by that author, and cited by Mr. Brown in the third volume of Mr. Aiton's Hortus Kewensis, not yet finished.—The plant in question is *Sophora genifloides* of Linnæus and Thunberg, *Podalyria genifloides* of Willdenow, Sp. Pl. v. 2. 502, and *Gompholobium maculatum* of Andr. Repof. t. 427.

IBBOT, BENJAMIN, in *Biography*, an English divine, was born at Beachamwell, in Norfolk, in 1680. After he had received the elements of a learned education he was entered of Clare-hall, Cambridge, where he took his degree of B. A. in 1699, and in the following year he removed to Corpus-Christi college, and was made a scholar of that house. He was, in 1707, taken into the family of archbishop Tennyson as librarian, and soon after the prelate made him his chaplain. After this he obtained considerable preferment in the church, and in 1716 he was appointed one of the chaplains in ordinary to king George I., and when his majesty visited the university of Cambridge, in the following year, his chaplain was created doctor of divinity by the royal mandamus. Shortly after he was appointed assistant preacher to the celebrated Dr. Samuel Clarke, and presented to the rectory of St. Paul's, Shadwell. In 1724 he was presented to a prebend at Westminster, and died in the following year. Two volumes of his sermons were published for the benefit of his widow by Dr. Clarke in the year 1726: and soon after his "Course of Sermons preached at the Lecture founded by the Honourable Robert Boyle." These are regarded as masterly replies to Mr. Collins's "Discourse on Free-Thinking."

IBBIT, in *Geography*, a town of Africa, and capital of a district, in Kordofan; 140 miles W. of Sennaar. N. lat. 13° 20'. E. long. 31°.

IBEK, in *Biography*, the slave of Schchabeddin, sultan of India, usurped the throne on the death of his master, and added to his dominions many provinces of Hindoostan. An account of his conquests was written in a volume, entitled "Tage al Mather." D'Herbelot. Bibl. Orient.

IBERA, in *Ancient Geography*, a town of Spain, seated on the Iberus or Ebro, which is represented by Livy (l. xxiii. c. 28.) as a very rich city, when the Romans took it.

IBERIA, Ἰβηρία, a name given by the generality of Greek writers to Spain, either from a colony of Iberians, a people bordering on mount Caucasus, planted there; or from the river Iberus, the Ebro of the moderns, one of the most famous rivers of this country. However, the ancients, who lived before Polybius, by Iberia understood only that part of Spain extending from the Pyrenees to Calpé, or the straits of Gibraltar, and terminated by the Mediterranean; the other part being unknown to, and consequently having no name among the Greeks and Romans. The true and proper Iberia is supposed to have been originally that part of Spain called Celtiberia (wh. ch see), from a body of Celts who settled in it, bounded by the Iberus, the Pyrenees, and the Mediterranean. See HISPANIA.

IBERIA was also a country of Asia, between the Euxine and Caspian seas. According to Ptolemy, it was bounded on the N. by a part of Sarmatia, on the E. by Albania; on the S. by the Greater Armenia; and on the W. by the Colchide. See GEORGIA.

IBERIS, in *Botany*, Ἰβηρίς, a name in Dioscorides, for something of the crefs kind, and therefore not unsuitably

retained for this genus.—Linn. Gen. 335. Schreb. 438. Willd. Sp. Pl. v. 3. 452. Mart. Mill. Dict. v. 2. Sm. Fl. Brit. 692. Juss. 240. Lamarck. Illustr. t. 557. Gærtn. t. 141. Class and order, *Tetradynamia Siliculosa*. Nat. Ord. *Siliquosa*. Linn. *Crucifera*. Juss.

Gen. Ch. *Cal.* Perianth inferior, of four obovate, concave, small, spreading, equal, deciduous leaves. *Cor.* Petals four, unequal, obovate, obuse, spreading, with long upright claws; the two external ones much the largest, of equal size; the two inner very small and reflexed. *Stam.* Filaments six, awl-shaped, erect, the two lateral ones shortest; anthers roundish. *Pist.* Germen superior, roundish, compressed; style simple, short; stigma blunt. *Peric.* Pouch erect, nearly orbicular, compressed, notched, surrounded with an acute border, two-celled; partition lanceolate; valves boat-like, compressed, keeled. *Seeds* few, nearly ovate.

Ess. Ch. Corolla irregular; its two outermost petals largest. Pouch emarginate, with several seeds.

This genus is singular in its natural order for the unequal petals, constituting an irregular flower, and affording a most decisive essential character. Reichard observes that in *I. rotundifolia* the petals are nearly equal; but we find them by no means such as to invalidate this character.

The species are eighteen in Willdenow, mostly herbaceous, half of them annual or biennial, some few of the rest rather shrubby. We have two in England, *I. amara*, Engl. Bot. t. 52, found in chalky fields but rare, distinguished by its brilliant white flowers, which sometimes procure it a place in the flower-garden; and *I. nudicaulis*, Engl. Bot. t. 327. Curt. Lond. fasc. 6. t. 42, found here and there on gravelly ground in the spring. Both these are annual.

I. sempervirens and *I. umbellata* are very frequently cultivated for ornament. The former is perennial and rather shrubby, conspicuous for a profusion of white blossoms, and well calculated to adorn rock-work; the latter, figured in Curt. Mag. t. 106, is a hardy annual, with purple flowers of various dyes.

I. linifolia is very nearly allied to the latter, of which indeed Linnæus at one time reckoned it a variety.

IBERUS, in *Ancient Geography*. See EBRO.

IBETI, in *Geography*, a town of Turkish Armenia; 33 miles S.S.W. of Akalziké.

IBEX, in *Zoology*, the name of an animal of the goat kind. (See CAPRA *Ibex*, &c.) This name is also given to some species of *Anielope*; which see.

IBIBIBOCA, the name of a species of serpent called by the Portuguese *cobra de coral*. It is about two feet in length, and of the thickness of a man's thumb; and tapers off at the tail to a thinness, till at last it ends in a sharp point. Its belly is all over white, and very bright and glossy; and its head is covered with white scales of a cubic figure, and with some black ones towards the edges. Its body is variegated with black, white, and red. It is a very slow mover; but is of a very terrible and poisonous kind. Ray.

IBICARAM, a name given by Piso to a species of *Cecilia*; which see.

IBIJARA, the name of an American species of serpent, called also *boddy*, and by the Portuguese *cega*, *cobre veiga*, and *cobra de las cabeças*. It is of the amphibia kind, and is generally said to have two heads, one at each end; but this is wholly erroneous. The head and tail are of the same shape, and of equal thickness, and the creature will strike equally with either; and, as it is said, its poison is equally contained at both. It is a snake of the smaller kind, being of about a foot long, and as thick as one's finger. It is white.

white in colour, and as shining and glossy as glass; and is very elegantly marked with rings and streaks of a brown or copper colour. Its eyes are small, and scarcely conspicuous, looking only like dots made by the point of a needle; it lives under ground, and feeds on ants and other small insects. It is often thrown up in digging; and the Portuguese say, it is a creature whose poison is beyond the reach of all the known remedies. Ray.

IBIJAU, in *Ornithology*. See *CAPRIMULGUS grandis*.

IBIPITANGA, in *Botany*. See *PLINIA*.

IBIRA, a name given by some authors to the tree which produces the cubebe, or cubebs of the shops.

IBIRACOA, in *Zoology*, the name of a species of serpent found in the West Indies; whose bite is always attended with very terrible effects. It is of a variegated colour, mottled with black, white, and red.

IBIS, in *Ornithology*, the name of an Egyptian bird, said by some to be a species of *Ardea* or *Heron*; by others of *Tantalus*; and by others of *Numenius*, or *Curlew*. See each of these articles, and also *HASSELIQUIST*. It is said to be peculiar to Egypt, and is there very serviceable in destroying the serpents, locusts, and other devouring insects; and hence it was, that, in early ages, they had divine honours paid them. Such is the account given by Herodotus, Diodorus Siculus, and Cicero.

It is remarkable with regard to this bird, that although it lives principally about the Nile, yet it never enters the water, nor can it swim. The use of glysters is said to have been learned from the ibis, and not from the stork. It generally builds its nests upon the palm-trees, to avoid the cats. Aldrovandus relates, that the flesh of the ibis is red, like a salmon's, that it is sweet, that its skin is very hard, and smells like wild fowl. This subject has been treated at large by M. Savigny, in his "Hist. Nat. et Myth. de l'Ibis," Paris 1805, 8vo. He first traces the description from the ancients, who mention the white ibis and the black, though the latter be not strictly black, but of a deep brown colour, with beautiful metallic reflections. But if the bitumen employed in embalming was too much heated, the feathers of the white ibis became black. That the ibis devoured serpents is a mere imagination of the ancients. Like the other birds of its kind, even the red curlew of Cayenne, and the white of Carolina, it could only have devoured worms, little fish, and aquatic insects. At present the white ibis is not regarded as resident in Egypt. According to the report of the inhabitants, these birds arrive when the Nile begins to increase, probably the real cause of the ancient veneration; their number augments as the river rises, and diminishes with its decrease, after which they return to Abyssinia. They would appear to reside in Egypt about seven months, at least in the Delta. The black, or rather brown ibis, arrives and returns later than the white. According to this account the ibis generally arrives in Egypt in June, and retreats in October, though some may linger till December.

IBITIN, in *Zoology*, the name of a very large and dangerous serpent in the Philippine isles. This animal twists its tail round the trunk of a tree, and strikes its prey, as men, deer, &c. which it entirely devours, and then squeezes itself against the tree, in order to digest what it has eaten.

IBITUPOCA, in *Geography*, a town of Brazil, in the province of Minas Geraes; 32 miles S. of Villa Rica.

IBOPETUBA, a small island in the Atlantic, near the coast of Brazil. S. lat. 25° 33'.

IBRAHIM, in *Biography*, sultan of the Turks, succeeded his brother Amurath or Morad IV. in 1640, being then in his twenty-third year. He had been long a prisoner

at the instance of Morad, who would have put him to death had he not been prevented by his mother; and such was the state of his mind, that he refused admission to the great officers of the government when they came to announce his brother's death, and his own accession to the throne, nor could he be prevailed on to open the doors of his dungeon till the dead body of Morad was laid in his view. Ibrahim was ill fitted for the cares of a crown, and resigned the duties of his station to his ministers, contenting himself with trifling amusements and gross voluptuousness. One of the first events of his reign was the capture of Azof, the principal post of the Cossack pirates who infested the Black sea: by which measure their depredations were repressed, and the navigation rendered clear to Constantinople. An attempt was made upon the island of Candia, but it was not successful. The lascivious desires of Ibrahim were the cause of his death: he had violated the chastity of the beautiful daughter of the Mufti, who, resolved upon revenge, took such means as to effect the end. He ordered the sultan to appear before him, which he refused: he then declared him an infidel, and incapable of exercising the authority of government. The janizaries took the part of the head of the church, and he was almost immediately strangled. This was in the year 1649: he left several sons, of whom three successively filled the throne. Mod. Univer. Hist.

IBRAHIM AL-SHIRAZI, a celebrated Mussulman doctor, a native of Shiraz, the capital of Fars, or Persia properly so called. It is not known at what period he flourished, but he sustains a very high rank among the expounders of the law, and was author of many works in Arabic, very highly esteemed. The principal of these are "An Exhortation to the Study of Jurisprudence;" "The Exemplar," an illustration of the principal articles, or, as the Mahometans call them, the foundations of the law. He is supposed to have been the author of a work on the art of scholastic disputation, with the Arabic title, signifying "The Search after Truth."

IBRAHIM AL-MEROUZI, a celebrated Mussulman doctor, who derived his surname from the city of Merou, in the province of Korasan, where he was born. He wrote many pieces in the Arabic language, which are greatly valued; and among others a commentary on the "Mozni," consisting of an abridgment of Mussulman law. At Bagdat, where he resided, he was consulted as an oracle in all matters relating to jurisprudence. In advanced life he removed from Bagdat to Cairo in Egypt, where he died in the year of the hegra 340.

IBRAHIM BEN IBRAHIM MEHERAN, one of the celebrated doctors of the sect of Schafci, was author of many works of high reputation; of which the chief is a defence of the Mussulman law against the objections of those unbelievers and Atheists described under the Arabic title, signifying "Men without Religion." He died in the year 418 of the hegra. A more full account of the persons just mentioned may be found in Herbelot's *Bibl. Orient.*

IBRAHIM EFFENDI, a native of Poland, who was raised by his courage and talents to the principal dignities in the Ottoman empire. He established the first printing-press in Turkey. The earliest work which he produced was on the military; he afterwards published the "Account of an Expedition against the Afghans;" "A Turkish Grammar;" and "A History of Turkey."

IBRAHIM, in *Geography*, a mountain of Arabia, in Yemen; 40 miles S. of Chamir.

IBRAHIM *Bassa*, a river of Syria, anciently *Adonis*, (which see),

fees), that runs into the Mediterranean, about five miles S. of Gibelet.

IBRAHIM Lik, a town of the Arabian Irak, on the Tigris; 80 miles N. of Bagdad.

IBRAIM, a town of Hungary; 14 miles N.N.E. of Nanas.—Also, a river of Persia, which runs into the Persian gulf, six miles S.W. of Mina.

IBRAS, a town of Lithuania, in the palatinate of Brzesc; 40 miles S.W. of Pinsk.

IBRIGI, a town of European Turkey, in Romania; 16 miles N.N.W. of Gallipoli.

IBRIM, a town of Africa, in the northern part of Nubia, subject to the Turks; 120 miles S. of Syene. N. lat. 22°. E. long. 32° 40'.

IBRIS, a small island of Scotland, in the Frith of Forth; three miles N.W. of North Berwick. N. lat. 56° 5'. W. long. 2° 51'.

IBUM. The rabbins give this name to the ceremony of a brother's marrying his sister-in-law, the widow of his brother, deceased without children, by virtue of the Mosaic law mentioned in Deut. xxv.

IBURAR, in *Geography*, a town of Asiatic Turkey, in Caramania; 16 miles N. of Alanieh.

IBURG, a town of Westphalia, in the bishopric of Osnabruck, having formerly a citadel, which was the episcopal palace; 10 miles S. of Osnabruck.

IBYCUS, in *Biography*, one of the nine celebrated Greek lyrics. Some say he was the son of a native of Reggio, but born in Messina. He was likewise a great musician, and inventor of the instrument called *Sambuca*, of four strings of acute sound; and according to Euphorion in Athenæus, of the Troglodites, from its resemblance to the sambuca, which was triangular. The military instrument mentioned by Polybius, lib. viii. was called *sambuca*.

Ibycus flourished in the 60th olympiad, and the 214th year of Rome. He was author of various works, of which Henry Stephens has collected fragments. The unfortunate Ibycus being attacked by thieves, and begging in vain that they would spare his life, when on the point of receiving the blow which left him for dead, he cried out to a flock of cranes that was hovering over him, to bear witness against his murderers. Some time after, these assassins being in a market, and having spied a flock of cranes, said to each other, laughing, there go the witnesses against us for the death of Ibycus. This speech being reported to the magistrates, the thieves were put to the torture, when they confessed the fact and were hung. Hence came the proverb *Ibyci Grues*, against villains whose crimes were accidentally discovered. The following verse of Ausonius on the subject is well known:

"Ibycus ut periit, vindex fuit altivolans Grus."

Plato, Plutarch, Athenæus.

IBYNUS. Pere Parran speaks of Ibynus as one of the best writers on music among the ancients before Boethius, St. Basil, St. Hillary, St. Augustine, St. Ambrose, St. Gelasius, &c. Where the good father Parran found this author we know not, as we have never met with his book or his name in our researches after the *Materia Musica*.

IBYRIESKI, in *Geography*, a town of Lithuania; 32 miles E. of Koniecpole.

ICA, or **Yça**, or **Valverde**, a town of Peru, in the audience of Lima, and one of three towns, which give name to a province called "Iça Pisco and Nasca." It is situated in a valley, and its principal commerce consists in glass, wine, brandy, &c.; it contains about 6000 souls; 140 miles E.S.E. of Lima. S. lat. 13 50'. W. long. 75° 28'.

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Iça, Pisco and Nasca, jurisdiction of, a province of Peru, in the audience of Lima, comprehending about 140 miles along the coast of the Pacific ocean, interfectured with sandy deserts. The oil and wine yielded by this province are excellent, and supply the other provinces; and where the land is capable of being watered, it produces corn, maize, and a variety of excellent fruits. The inhabitants near the coast are employed in catching fish, which they cure and send in great quantities into the inland country.

ICACO, in *Botany*. See **CHRYSOBALANUS**.

ICADES, the name of an ancient feast, celebrated every month by the Epicurean philosophers, in memory of their master Epicurus.

The day on which it was held was the twentieth day of the moon, or month, which was that whereon Epicurus was born, and hence came the name *icades*, from *icados*, of *icados*, twenty.

They adorned their chambers on this day, and bore his image in state about their houses, making sacrifices, &c.

ICARIA, in *Ancient Geography*, an island of the Ægean sea, situated W. of the isle of Samos, E. of that of Delos, and S.S.E. of that of Chios.

ICARIAN SEA, that part of the sea of the Archipelago into which Icarus fell. Thus Diodorus and Ovid deduce its name. "Icarus Icarias nomine fecit aquas." But the learned Bochart says, that this part of the Ægean sea was so called upon account of the isle Icaria, or Icaure, which, in the Phœnician language, imports "fishy."

ICARIUM, an island of the Persian gulf, over-against the mouth of the Euphrates. Here, according to Strabo, were a temple and oracle of Apollo. Arrian calls it Icaros, Pliny, Ichara, and Ptolemy, who places it on the coast of Arabia Felix, calls it Ichara and Icaros.

ICARUS, a river of Asia, in Scythia, which flowed into the Oxus, according to Pliny.

ICARUS, in *Fabulous History*, the son of Dedalus, who was shut up by the king of Crete, with his father, who had favoured the amours of the queen in the labyrinth. As Dedalus knew all its mazes, he found no great difficulty in extricating himself; and having gotten a ship which Paphæ had provided for him, he fixed sails to it, the use of which was not then known in Greece, and thus was able to outstrip Minos's galley which pursued him with oars. His son Icarus, having arrived in an island very remote from the continent, and endeavouring to land too precipitately, fell into the sea and was drowned; or, not having skill enough to manage his barge, as we learn from Pausanias (in *Ærot.*), perished near the island of Samos. The poets veiled this escape under the ingenious fiction of wings, the invention and use of which are ascribed to Dedalus; thus Horace, (*Od. l. i.*) speaks of them:

"Expertus vacuum Dædalus æra
Pennis non homini datis."

The young and adventurous Icarus, it is said, disregarded the wise counsel of his father, who recommended him not to soar too high, lest the heat of the sun should melt the wax with which his wings were fastened, while he himself flew near the surface of the water; and even took care, as Diodorus Siculus remarks, to moisten his wings from time to time, lest they should be over-heated; and fell into the sea.

ICCIUS PORTUS, or **ITIVS Portus**, the harbour of Gaul, whence Cæsar embarked his troops for the invasion of England. Some have referred this harbour to Bologna, others to Witland, and others to Calais.

ICE, a brittle transparent body, formed of some fluid, frozen or fixed by cold.

The specific gravity of ice to water is as eight to nine; or the specific gravity of water being 1, that of ice is .93; hence, being lighter than water, it floats upon it. The specific gravity of ice was tried by Dr. Irving, in Phipps's voyage to the north pole; who found, that when a piece of the most dense ice which he could meet with was immersed in snow-water, the thermometer 34° , fourteen fifteenth parts sunk under the surface of the water: in brandy just proof, it barely floated; in rectified spirits of wine, it fell to the bottom at once and dissolved immediately. This rarefaction of ice has been supposed to be owing to the air-bubbles produced in ice while freezing; these, being considerably large in proportion to the water frozen, render the ice so much specifically lighter. Accordingly, it is said, that a considerable quantity of air is lodged in the interstices of water, though it has not there any elastic property, on account of the disunion of its particles; but these particles coming closer together, and uniting as the water freezes, light, expansive, and elastic air-bubbles are thus generated, and increase in bulk as the cold grows stronger; whence of course the ice grows lighter, and these air-bubbles acquiring an elastic force burst to pieces any vessel in which the water is closely contained. But snow-water, or any water long boiled over the fire, affords an ice more solid than ordinary, and with fewer bubbles. Pure water, long kept in vacuo, and frozen afterwards there, freezes much sooner, on being exposed to the same degree of cold, than water unpurged of its air and set in the open atmosphere. And the ice made of water thus divested of its air will expand in freezing; though it is much harder, more solid and transparent, and more ponderous than common ice.

But M. de Mairan, in a dissertation on ice, more justly attributes the increase of the bulk of the water under this form, principally to a different arrangement of its parts: the icy skin on water, being composed of filaments which are found to be joined constantly and regularly at an angle of 60° , and which, by this disposition, occupy a greater volume than if they were parallel. He found the augmentation of the volume of water by freezing, and in different trials a 14th, an 18th, and a 19th; but when the water was previously purged of air, only a 22d part. Besides, ice, after its formation, continues to expand by cold; a piece of ice, which was at first only a fourth part specifically lighter than water, on being exposed some days to the frost, became a 12th part lighter; and thus he accounts for the burling of ice in ponds. See CONGELATION, FREEZING, and FREEZING Mixture.

To make the most perfect ice, we should take the purest water, and perfectly purge it of its air by the air-pump; then freeze it in the severest frost, by means of Mr. Fahrenheit's contrivance. Thus we obtain an ice of the greatest hardness, density, purity, transparency, and gravity.

It appears by an experiment of Dr. Hooke, in 1663, that ice refracts the light less than water; whence he infers, that the lightness of ice, which causes it to swim in water, is not produced merely by the small bubbles which are visible in it, but that it arises from the uniform constitution or general texture of the whole mass. This fact was afterwards confirmed by M. de la Hire. Hooke's Exper. by Derham, p. 26. Acad. Par. 1693. Mem. p. 25.

Dr. Wollaston has fully confirmed the observation of Dr. Hooke by means of an accurate instrument which he has contrived for determining the refraction of different substances; so that ice must be considered as the least refractive of any known substances that are not aeriform. The refrac-

tive power of ice is stated by Dr. Wollaston, and by Dr. Young, by calculation, from halos, at 1.31. (See REFRACTION.) The capacity for heat of water to ice is as 1.000 to .900; and the heat, in a given measure, is as 1.000 to .840.

Ice is known to evaporate as well as water, and some say in an equal, others, in a greater degree. See EVAPORATION.

In the mountains of Switzerland there are immense masses of ice, which, by the tradition and histories of the country, must have lain there many centuries. At certain times there happen cracks in these, and by these cracks the vast thickness of the masses may in some measure be guessed at; some of them being three or four hundred ells deep, and yet none of them ever having gone through the whole thickness.

The vast bodies of ice met with in the northern seas, near Hudson's bay, are surprising; some of them being immersed a hundred fathoms or more under the surface of the ocean, and a fifth or sixth part above, and three or four miles in circumference. See Phil. Trans. N^o 465. sect. 2.

These floating mountains of ice owe their vast bulk and durable nature to a cause not considered by many; that is, to their not being common ice, but the ice of sea-water; many experiments proving, that in acid and spirituous liquors, when the frost has power over them, the watery parts only are affected, and the ice is tasteless, while the liquor remains concentrated, and much stronger than before at the bottom or in the centre. It was generally supposed that the saline liquors, and consequently sea-water, were affected by freezing in the same manner; that is, its watery part alone was frozen, and the salt separated from the part so congealed: but Dr. Lister alleges, that the ice formed of sea-water is really salt, and does contain sea-salt; and finally that it is, by means of this salt contained in it, rendered more durable than common ice. If a phial of salt-water be exposed to the air in frosty weather till flakes of ice are found in it, and then brought into a warm room, those flakes will remain even in that place a long time undissolved; and if they are taken out and exposed at a small distance to the fire, they will not run into water as common ice would, but they will by degrees evaporate, and there will be left only a little white salt.

Since sea-water, when frozen, thus forms a very durable ice, it appears easy to conceive, that the immense masses of such ice found in the northern seas should continue undissolved through the whole year, and at the return of the freezing season remaining of the same bigness as at first, they must of consequence then become much bigger by the freezing of more ice about them; and thus continuing to lose very little, and that only by accidents, and annually to increase a great deal, it is not wonderful that they become so large. Phil. Trans. N^o 167. 836. See SEA-WATER.

But there have been different opinions with regard to the origin of those vast piles of ice, resembling whole islands, in the northern regions. Some ascribe them to snow, which falling in great abundance in these cold climates, and melting in the sea, accumulates gradually, till those huge heaps are at length formed: but the more common opinion is, that this ice is formed from the fresh waters which flow from the neighbouring lands. It is certain that great quantities of floating ice are discharged by the river Obi, and kept in a state of constant agitation by it. Bartoli has written an Italian treatise expressly on ice and coagulation. And the Acta Eruditorum furnish us with an account of a French author on the same subject. See COAGULATION, COLD, and CRYSTALLIZATION.

The formation or coagulation of ice-islands has not yet been

been thoroughly investigated. Captain Cook (Second Voyage, vol. ii. p. 240.) objects to the opinion of those who ascribe them to the freezing of the water at the mouths of large rivers, or great cataracts, where they accumulate till they are broken off by their own weight. He says that no ice was found incorporated with earth, or any of its produce, which must have been the case, if it had been coagulated in land-waters. He doubts whether there be any rivers in the countries to which he refers: "it is certain," he says, "that we saw not a river or stream of water on all the coast of Georgia, nor on any of the southern lands. Nor did we ever see a stream of water run from any of the ice-islands. How are we then to suppose that there are large rivers? The vallies are covered, many fathoms deep, with everlasting snow; and, at the sea, they terminate in icy cliffs of vast height. It is here where the ice-islands are formed; not from streams of water, but from consolidated snow and sleet, which is, almost continually, falling or drifting down from the mountains, especially in the winter, when the frost must be intense. During that season, the ice-cliffs must so accumulate as to fill up all the bays, be they ever so large. This is a fact which cannot be doubted, as we have seen it so in summer. These cliffs accumulate by continual falls of snow, and what drifts from the mountains, till they are no longer able to support their own weight; and then large pieces break off, which we call "ice-islands." Such as have a flat even surface must be of the ice formed in the bays and before the flat vallies: the others, which have a tapering unequal surface, must be formed on, or under the side of a coast composed of pointed rocks or precipices, or some such uneven surface. For we cannot suppose that snow alone, as it falls, can form, on a plain surface, such as the sea, such a variety of high peaks and hills, as we see on many of the ice isles. It is certainly more reasonable to believe that they are formed on a coast whose surface is something similar to theirs. I have observed that all the ice-islands of any extent, and before they begin to break to pieces, are terminated by perpendicular cliffs of clear ice or frozen snow, always on one or more sides, but most generally all round. Many, and those of the largest size, which had a hilly and spiral surface, shewed a perpendicular cliff or side from the summit of the highest peak down to its base. This to me was a convincing proof that these, as well as the flat isles, must have broken off from substances like themselves; that is, from some large tract of ice."

"These ice cliffs," captain Cook apprehends, "extend a good way into the sea, in some parts, especially in such as are sheltered from the violence of the winds. It may even be doubted if ever the wind is violent in the very high latitudes. And that the sea will freeze over, or the snow that falls upon it, which amounts to the same thing, we have instances in the northern hemisphere. The Baltic, the gulf of St. Lawrence, the straits of Belle-Isle, and many other equally large bays, are frequently frozen over in winter. Nor is this at all extraordinary; for we have found the degree of cold at the surface of the sea, even in summer, to be two degrees below the freezing point; consequently, nothing kept it from freezing but the salt it contains, and the agitation of its surface. Whenever this last ceaseth in winter, when the frost is set in, and there comes a fall of snow, it will freeze on the surface as it falls, and in a few days, or perhaps in one night, form such a sheet of ice as will not be easily broken up. Thus a foundation will be laid for it to accumulate to any thickness by falls of snow, without it being at all necessary for the sea-water to freeze. It may be, by this means, these vast floats of low ice are,

in the spring of the year, formed, and which, after they break up, are carried by the currents to the north."

The northern ice extends about 9° from the pole; the southern 18° or 20° ; in some parts even 30° ; and floating ice has occasionally been found in both hemispheres as far as 40° from the poles, and sometimes, as it has been said, even in latitude 41° and 42° . Between 54° and 60° south latitude, the snow lies on the ground, at the sea side, throughout the summer. The line of perpetual congelation is three miles above the surface at the equator, where the mean heat is 84° ; at Teneriffe, in latitude 28° , two miles; in the latitude of London, a little more than a mile; and in latitude 80° north, only 1200 feet. At the pole, according to the analogy deduced by Mr. Kirwan, from a comparison of various observations, the mean temperature should be 31° . In London, the mean temperature is 50° ; at Rome and at Montpellier, a little more than 60° ; in the island of Madeira, 70° ; and in Jamaica, 80° . See CONGELATION, COOLING, and TEMPERATURE.

Sir Robert Barker has particularly described the process of making ice in the East Indies, where, during his time, he has never seen any natural ice. For this purpose they dig, on a large open plain, three or four pits, about thirty feet square, and two deep each; the bottoms of which they cover about eight inches or a foot thick with sugar-cane, or the stems of the large Indian corn, dried. On this bed are placed in rows a number of small shallow unglazed earthen pans, formed of a very porous earth, a quarter of an inch thick, and about an inch and a quarter deep; which, at the dusk of the evening, they fill with soft water that had been boiled. In the morning, before sun-rise, the ice-makers attend at the pits, and collect what was frozen in baskets, which they convey to the place of preservation. This is generally prepared on some high dry situation, by sinking a pit fourteen or fifteen feet deep, lining it first with straw, and then with a coarse kind of blanketing. The ice is deposited in this pit, and beat down with rammers, till at length its own accumulated cold again freezes it, and forms one solid mass. The mouth of the pit is well secured from the exterior air with straw and blankets, and a thatched roof is thrown over the whole. The quantity of ice formed by the method above described, depends on a light atmosphere, and clear serene weather. Phil. Trans. vol. lxxv. pt. ii. art. 22. See COOLING, and COOLING of Liquors.

ICE-bergs are large bodies of ice filling the vallies between the high mountains in northern latitudes; the face of which towards the sea is nearly perpendicular, and of a very lively light green colour. Some of these are at least three hundred feet high.

ICE, *Blink of the*. See BLINK of the Ice.

What is called the ice-blink in Greenland is an amazing congeries of ice, at the mouth of an inlet, the splendour of which is discerned at the distance of many leagues. It is said to extend in magnificent arches for about 24 miles.

ICE-boat, in *Nautical Affairs*, is a kind of barge, having a square and very sloping head, made very strong and shod with iron, which is drawn along canals by several horses, during frosts, to break the ice, when it is not too thick to be thus broken, and there is a prospect of its not forming again. A light kind of flat-bottomed boat has sometimes been used on the ice, for the purpose of rescuing skaters and others, where the ice has broken in, and such are also called ice-boats, of which a model by count Bernstold is preserved in the Repository of the Society of Arts in the Adelphi. Class iv. N^o 134, which is described vol. x. p. 277 of the Society's Transactions.

ICE-borne, in *Geology*, is employed to describe the man-

ner in which large fragments of rocks have been transported, to places far distant from their native situations, on masses of ice, floating on the ocean, before it had been reduced to its present limits: according to the theory of Mr. Jameson, *Geognosy*, vol. iii. p. 33. Mr. Playfair supposes, in his illustration of the Huttonian theory, § 348, that glaciers or inclined planes of ice, existing on the surface of the earth, previous to the excavation of valleys, were the means of transporting many of such blocks, those of granite in particular; an opinion ably combated by M. De Luc, in his *Geology*, § 234: but whose explanation of this important and very common phenomenon, *viz.* that they were projected into the air, from chafms, or fissures in the earth, extending down to certain great subterranean caverns, by the force of vast currents of air and water issuing therefrom, seems (says Mr. Farey) less probable, than that recently offered by himself, *viz.* that the extraneous blocks of stone, and all other alluvial matters found on mountains and hills, were transported during the disturbed and reversed-action of gravity, occasioned by the perigeic visits of a former satellite. See *Philosophical Magazine*, vol. xxxvi. p. 6.

Ice-cream, Method of making. Take a sufficient quantity of cream, and, when it is to be mixed with raspberry, or currant, or pine, a quarter part as much of the juice or jam as of the cream; after beating and straining the mixture through a cloth, put it with a little juice of lemon into the mould, which is a pewter vessel, and varying in size and shape at pleasure; cover the mould, and place it in a pail about two-thirds full of ice, into which two handfuls of salt have been thrown; turn the mould by the hand-hold with a quick motion to and fro, in the manner used for milling chocolate, for eight or ten minutes; then let it rest as long and turn it again for the same time; and having let it to stand half an hour, it is fit to be turned out of the mould, and to be sent to table.

Lemon juice and sugar, and the juices of various kinds of fruits, are frozen without cream, and when cream is used, it should be well mixed.

Ice-house, in Gardening, a sort of building sunk in the ground for the purpose of preserving ice for use during the summer season, when the weather becomes hot.

Situation.—The proper situation for an ice-house, is that of a dry spot of ground; as wherever there is moisture the ice will be liable to dissolve; of course in all strong soils, which retain the wet, too much care cannot be taken to make drains all round the houses to carry off moisture; as when this is lodged near them, it will occasion a damp, which is always prejudicial to the keeping of ice in them.

The aspect of ice-houses should be towards the east or south-east, for the advantage of the morning sun to expel the damp air, as that is more pernicious than warmth; for which reason, trees in the vicinity of an ice-house tend to its disadvantage.

The best soil for an ice-house to be made in is chalk, as it conveys away the waste water without any artificial drain; next to that, loose stony earth, or gravelly soil.

The places should likewise be elevated, that there may be descent enough to convey off any wet that may happen near them, or from the ice melting; and also as much exposed to the sun and air as possible; not under the drip, or in the shade of trees, as is too often the practice, under the supposition, that if exposed to the sun, the ice will melt away in summer, which never can be the case where there is sufficient care taken to exclude the external air, as the heat of the sun can never penetrate through the double arches of the buildings, so as to add any warmth to the internal air;

while, when entirely open to the sun and wind, all damps and vapours are readily removed.

Shape.—The external form of the building may be according to the fancy of the owner; but for the well, into which the ice is put, a circular form is the most convenient; the depth and diameter of it being proportioned to the quantity of ice wanted; but it is always best to have sufficient room, as when the house is well built it will keep the ice two or three years: and there will be this advantage in having it large enough to contain ice for two years' consumption, that if a mild winter should happen, when there is no ice to be had, there will be a stock to supply the want in the house already.

Where the quantity wanted is not great, a well of six feet diameter, and eight feet deep, will be large enough, but for a large consumption, it should not be less than nine or ten feet diameter, and as many deep: where the situation is either of a dry chalky, gravelly, or sandy kind, the pit may be made entirely below the surface of the ground; but in strong loamy, clayey, or moist ground, it will be better to raise it so high above the surface, as that there may be no danger from the wetness of the soil about it.

At the bottom of the well there should be a space about two feet deep left, for receiving any moisture which may drain from the ice, and a small underground drain should be laid from this, to carry off the wet; over this space should be placed a strong grate of wood, to let the moisture fall down which may at any time happen, from the melting of the ice. The sides of the well must be walled up with brick or stone at least two feet thick; but if it be thicker it will be better, as the thicker the walls are made, the less danger there is of the well being affected by external causes. When the wall of the well is brought within three feet of the surface, there must be another outer arch or wall begun, which must be carried up to the height of the top of the intended arch of the well; and if there be a second arch turned over from this, it will add to the goodness of the house; but this must depend on the person who builds going to the expence. When not, the plate into which the roof is to be framed must be laid on this outer wall, which should be carried high enough above the inner arch to admit of a door way in, to get out the ice. Where the building is to be covered with slate or tiles, there should be a thickness of reeds, straw, or other similar materials laid under, to guard against the effects of the sun and external air; where they are laid two feet thick, and plastered over with lime and hair, there will be no danger of the heat penetrating in such a way as to prove injurious.

The external wall of the house need not be built circular, but of any other form, as square, hexangular, or octangular; and where it stands much in sight may be so contrived as to make it a pleasing object to the sight.

But ice-houses may be built in such a manner as to have alcove seats in the front, having passages to get out, and put in the ice behind them; or the entrance may be behind, to the north; small passages being left next the seats, through which to enter to take out the ice, a large door being contrived with a porch wide enough for a small cart to back in, to shoot down the ice upon the floor near the mouth of the well, where it may be well broken before it is put down. The aperture of this mouth of the well need not be more than two feet and a half in diameter, which will be large enough to put down the ice, a stone being left to stop it with, which must be closed up as securely as possible after the ice is put in, and all the vacant space above and between this and the outer door be filled close with barley straw, or other similar materials to exclude the external air from entering.

The door to enter by for taking out the ice should be no larger than is absolutely necessary for the coming at the ice, and must be strong and close to exclude the air, and at five or six feet distance from this another door should be contrived, which should be closely shut before the inner door is opened, whenever the ice is taken out of the house.

When the house is thus finished, it should have time to dry before the ice is put into it; as when the walls are green the damp of them frequently dissolves the ice. And at the bottom of the well, upon the wooden grate, some small faggots should be laid; and if upon these a layer of reeds be placed smooth for the ice to rest upon, it will be better than straw, which is commonly used.

Proper sort of Ice.—In the choice of the ice, the thinner it is the better it may be broken to powder; as the smaller it is broken the better it will unite when put into the well. In putting it in, it should be rammed close, and a space left between it and the wall of the well, by straw being placed for the purpose, so as to give passage to any moisture that may be collected by the dissolving of the ice on the top or otherwise.

In putting the ice into the house, some mix a little nitre with it, to make it congeal more fully; but this is not necessary.

As the ice becomes solid in the well, an iron crow is necessary to take it up with.

The ice-house is, as has been seen, capable of being made an ornamental building; but this is seldom done; it being generally placed in a sequestered spot, on the side of a hill or sloping ground, the base of which is lower than the bottom of the well, the outside being well banked up with earth, to keep out all external air and heat, and neatly covered with turf or thatch.

To construct an ice-house, first choose a proper place at a convenient distance from the dwelling-house or houses it is to serve: dig a cavity (if for one family, of the dimensions specified in the design) of the figure of an inverted cone, sinking the bottom, concave, to form a reservoir for the waste water till it can drain off; if the soil requires it, cut a drain to a considerable distance, or so far as will come out of the side of the hill, or into a well, to make it communicate with the springs, and in that drain form a *sink* or *air-trap*, marked *l* (*Plate XX. Miscellany, fig. 5.*) by sinking the drain so much lower in that place as it is high, and bring a partition from the top an inch or more into the water, which will constantly be in the trap, and will keep the well air-tight. Work up a sufficient number of brick piers to receive a cart-wheel, to be laid with its convex side upwards to receive the ice; lay hurdles and straw upon the wheel, which will let the melted ice drain through, and serve as a floor. The sides and dome of the cone are to be nine inches thick, the sides to be done in steened brickwork, *i. e.* without mortar, and wrought at right angles to the face of the work; the filling-in behind should be with gravel, loose stones, or brick-bats, that the water which drains through the sides may the more easily escape into the well. The doors of the ice-house should be made as close as possible, and bundles of straw placed always before the inner door to keep out the air.

Description of the parts referred to by the letters:

a The line first dug out.

b The brick circumference of the cell.

c The diminution of the cell downwards.

d The lesser diameter of the cell.

e The cart wheel, or joists and hurdles.

f The piers to receive the wheel or floor.

g The principal receptacle for straw.

- b* The inner passage, } each of these passages has a separate door.
i The first entrance, }
k The outer door, }
l An air-trap.
m The well.
n The profile of the piers.
o The ice filled in.
p The height of the cone.
q The dome worked in two half-brick arches.
r The arched passage.
s The door-ways inserted in the walls.
t The floor of the passage.
u An aperture through which the ice may be put into the cell; this must be covered next the crown of the dome, and then filled with earth.
x The sloping door, against which the straw should be laid.

The ice, when to be put in, should be collected during the frost, broken into small pieces, and rammed down hard in the strata of not more than a foot, in order to make it one complete body; the care in putting it in, and well ramming it, tends much to its preservation.

In a season when ice is not to be had in sufficient quantities, snow may be substituted.

Ice may be preserved in a dry place under ground, by covering it well with chaff, straw, or reeds. *Phil. Trans. N^o 84. p. 140.* See SNOW.

Great use is made of chaff in some places of Italy to preserve ice: the ice-house for this purpose need only be a deep hole dug in the ground on the side of a hill, from the bottom of which they can easily carry out a drain, to let out the water which is separated at any time from the ice, that it may not melt and spoil the rest. If the ground is tolerably dry, they do not line the sides with any thing, but leave them naked, and only make a covering of thatch over the top of the hole; this pit they fill either with pure snow, or else with ice taken from the purest and clearest water; because they do not use it as we do in England, to set the bottles in, but really mix it with the wine. They first cover the bottom of the hole with chaff, and then lay in the ice, not letting it any where touch the sides, but ramming in a large bed of chaff all the way between: they thus carry on the filling to the top, and then cover the surface with chaff, and in this manner it will keep as long as they please.

When they take any of it out for use, they wrap the lump up in chaff, and it may then be carried to any distant place, without waste or running. *Phil. Trans. N^o 8.* See ICE.

ICE, *Palace of*, a palace built of ice by the empress Anne of Russia, on the bank of the Neva in 1740, 52 feet long, which, when illuminated, had a surprising effect.

ICE-plant, in *Botany*. See MESEMBRYANTHEMUM.

ICELAND, in *Geography*, the largest island in Europe next to Great Britain, is surrounded by that part of the northern sea which geographers have called the Deucalidian ocean. Its length, from the most western cape to the most eastern, is about 260 British miles, and its breadth from north to south about 200 miles. Mallet indeed reckons its length from east to west at about 112 Danish miles (12 to a degree), and its mean breadth 50 of those miles. The number of its inhabitants is estimated at about 50,000, or one to the square mile. Nature herself hath marked out the division of this island. Two long chains of mountains run from the middle of the eastern and western coasts, rising by degrees till they meet in the centre of the island, from whence two other chains of smaller hills gradually descend till they reach

ICELAND.

reach the coasts that lie N. and S.; thus making a primary division of the country into four quarters (herdingers), which are distinguished by the four points of the compass towards which they lie. The whole island can be considered only as one vast mountain, interspersed with long and deep vallies, concealing in its bosom heaps of minerals, of vitrified and bituminous substances, and rising on all sides out of the ocean in the form of a short blunted cone. Earthquakes and volcanoes have through all ages desolated this unhappy island, "while it abounds in sulphur and subterranean fires, and volcanoes appear in every quarter. It would be too bold a theory (says Pinkerton), to suppose that so wide an expanse was ejected from the sea; not to mention that the furturband, or carbonated wood, found at a great depth, evinces a most remote vegetation. The highest mountains clothed with perpetual snow are styled "Yokuls;" and of these Snaefial, hanging over the sea in the S. W. part of the island, is esteemed the highest, being computed at 6860 feet. The mountains are said to be chiefly sand-stone, pudding-stone, with petro-silex, steatite, and argillaceous schist. The calcareous spar of Iceland is celebrated since the days of Newton for its double refraction: calcedony, zeolite, lava, pumice, black obsidian, and malachite, or copper stalactites, are among its mineral productions." Of *Hecla* we have already given an account under that article. The mountains of Krabla, near Myvatn, in the N. W., and of Kattlegia, were more known than Hecla by their eruptions in the 18th century. The mountains of Iceland exhibit indications of their containing iron, copper, and silver ore. In this island there are no salt springs, but salt has been found at the foot of the volcanoes or burning mountains. Woods rarely occur, but many large trees are driven hither by the sea, especially on the N. coast, where, for want of shipping to export it for sale, it is suffered to lie and rot. Shrubs, on which grow all sorts of berries, as juniper-berries, black-berries, &c. are burnt in great abundance every year for charcoal, used by the natives in their forges. On some of the mountains, many of which, consisting merely of rocks and sand, are barren, there are plains of several miles in extent covered with verdure and producing fine grass; between other mountains dispersed over the island, there are vallies which afford plentiful nourishment for cattle. The finest pastures are in the northern parts of the island, where the grass springs rapidly and to a great height. The cattle are generally driven among the mountains to graze, where they find good pasture; but the grass that grows near the habitations of the Icelanders is reserved for winter fodder. Iceland, though a very mountainous country, is intersected with roads which are passable for horses; and carriages, which were formerly used, being now laid aside, some hundreds of pack-horses pass annually over the mountains from the north to the trading places in the south parts of the island; and these are loaded with butter, woollen manufactures, &c. which are bartered for other commodities. The boiling springs of Iceland present a singular phenomenon; that of Geyser to the N. of Skallholdt is the most remarkable, rising from an aperture 19 feet in diameter, and springing at intervals to the height of 50 or even 90 feet. The chief rivers of Iceland are in the east; the Skalfande, the Oxarird, and the Brua, all flowing from the S. to the N. some are white with lime, and others smell of sulphur. The common fuel of the country is turf, some of which emits a strong sulphureous smell; and even fish-bones are burnt in some parts of the island. Iceland affords a great variety of salubrious and medicinal herbs; bread is little known among the common people, who cannot purchase that which is imported into the harbours;

but subsist chiefly on fresh and dried fish, and also on milk, oatmeal, and flesh. In times of scarcity they are constrained to prepare flour of various plants described by Von Troil; and their common drink is milk, and also a liquor called "Syra," which is four whey, kept in casks and left to ferment: beer being scarce. Bears are frequently driven to this island with the large flakes of ice from Greenland; but they are destroyed by the inhabitants; so that the only wild beasts to be seen in the island are brown and white foxes. The horses are small, but strong and mettlesome; and those that are broken for the saddle excepted, they lie in the open air through the year, and subsist in winter on the fodder which they can scrape from under the ice and snow. Sheep are numerous, so that a single person possesses a flock of three, four, or five hundred. In winter they are driven to shelter at night, and also in very severe weather during the day. Their large caves afford convenient places of resort. In winter the sheep are occasionally turned out, when the weather is fair and mild, to pick up what they can find under the snow; and if at such times they are surprized by a great fall of snow, they form themselves into a compact body, laying their heads together in the centre; and thus arranged they are covered with snow, and benumbed with cold, so as to be unable to extricate themselves without the assistance of their owner. In this season of hunger and distress, they have been sometimes known to eat one another's wool. Goats in this island are few. Some of the Iceland oxen and cows have no horns; and in the southern parts they are fed with fish bones, and the water in which the fish was boiled. Here are no hogs; few cats; but dogs are numerous. Poultry and tame fowl are scarce, the feeding of them being dear; swans, wild geese, and ducks are plentiful; and among the latter we may mention the eider, the eggs and feathers of which are so much valued. Snipes, woodcocks, &c. are also found in this island. The birds of prey are the eagle, hawk, raven, and falcon, the latter being reckoned the best in Europe. The rivers, lakes, and bays, with the other parts of the sea, supply the natives with various sorts of fish in great abundance. The cod-fishery near Iceland begins at the point of Brederwick, and ends at that of Langernefs, running by Cape North and the isle of Grims, and has occupied more than 200 Dutch vessels and about 80 French. The Icelanders are naturally robust and vigorous; but their strength is soon exhausted by the hardships they endure at sea in their fisheries; so that about the age of fifty years they are generally afflicted with disorders of the breast and lungs, and few attain to advanced age. In the middle of the 14th century this island was greatly depopulated by a pestilence called the "Black death," and in 1784 a dreadful mortality carried off 19,488 horses, 6800 beeves, 129,947 sheep, if the account given by Catteau (vol. i.) be not exaggerated. The exports from Iceland are principally dried fish, salted mutton, beef, butter, train-oil, tallow, coarse and fine jackets of wadmul, woollen stockings and gloves, red wool, sheep-skins, fox-tails of various colours, feathers, and particularly eider-down, quills, falcons, and hawks. The imports to Iceland are chiefly iron, horses' shoes, timber, meal, bread, brandy, wine, tobacco, coarse linen, a few silken stuffs, and domestic utensils. The first inhabitants of Iceland were a colony of Norwegians, who, to withdraw themselves from the tyranny of Harold Harfagre, retired thither in the year 874. The government was an aristocratic republic for about 387 years, till in 1261 it submitted to Norway. The present inhabitants, being of Norwegian extract, have few peculiar manners; but retain more of the ancient dress and customs of their

their ancestors. The Icelandic language is the most ancient and venerable, and of course the purest dialect of the Gothic. It has engaged the attention of many profound scholars, who have considered it as the parent of the Norwegian, Danish, and Swedish, and in a great degree of the English, though this last may probably be more connected with the Frisic, and other dialects of the north of Germany. In the ancient Icelandic the Lord's prayer is as follows :

"Fader uor som est i Himlum. Helgad warde thitt nama. Tilkomme thitt Rikie. Skie thin vilie so fom i Himmalam so och po ordaunç. Wort dachlicka Brodh gif os i dagh. Ogh forlat os uera Skuldar so fom ogh vi forlate them os Skildighe are. Ogh inled os ikkie i Frestalfan. Utan frels os ifra ondo. Amen."

In Iceland, extraordinary as it may seem, letters flourished in a very high degree from the 11th to the 14th century; and independent of the fabulous sagas, which were very numerous, the solid and valuable works then produced in that island might fill a considerable catalogue. From Iceland we derived the "Edda" (which see), and our knowledge of the ancient Gothic mythology. From Iceland the Swedes, Norwegians, Danes, and Orcadians, drew their chief intelligence concerning their ancient history: Snorro in particular being styled the Herodotus of the North: and the Landnama, or book of the origins of Iceland, is an unique work, displaying the names and property of all the original settlers, and the circumstances attending the distribution of a barbaric colony. There still exists in Iceland a bath, built by Snorro, in the 13th century; but the edifices being of timber, no remains of them exist.

In this island there are properly no towns; nevertheless the houses of the Iceland company, suppressed on account of its commercial monopoly in 1759, at the twenty-two ports or harbours, of which there are three or four at each harbour, have been dignified with the appellation of towns; though they are only trading places. We have already said that Iceland consists of four quarters, separated from one another by ridges of mountains. The north quarter constitutes the diocese of Holun, containing 140 churches. The other three quarters are included in the diocese of Skalholt, to which belong 163 churches. These two bishoprics are only valued at 150*l.* each. The religion of this island as well as of the Danish dominions to which it belongs, is the Lutheran. Iceland was converted to Christianity at the same period with Norway, in the reign of Olaf I. There are two Latin schools maintained at the royal expence in Iceland. The winter season in this island is unexpectedly moderate, so as generally to permit the natives to cut turf even in January. In this extensive island there is not much room for agriculture; which has however greatly declined since the period of the republic, when treatises were written on this interesting subject. N. lat. 63° 15' to 67° 15'. W. long. 10° to 25°.

ICELAND, or *Island Crystal*. See CRYSTAL of Iceland.

ICELE, in *Mythology*, the son of Sleep, according to the fable; and brother of Morpheus, who is said to have the power of changing himself into a variety of forms; "varias imitantia formas somnia, delusæ mentis imago." Ovid. Met. lib. ii. c. 630.

ICENI, in *Ancient Geography*, a British people, who were situated to the north of the Trinobantes, and inhabited that country, which is now divided into the counties of Suffolk, Norfolk, Cambridge, and Huntingdon. This nation is called by several different names by the Greek and Roman writers, as Simeni by Ptolemy, Cenimagni by Cæsar, &c. They do not seem to have made any opposition to the Romans at their first invasion under Cæsar,

but made their submission at the same time with several of the neighbouring states. (Cæs. Bell. Gal. l. v. c. 14.) At the next invasion in the reign of Claudius, the Iceni entered into a voluntary alliance with the Romans; but soon after, joining with some other British tribes in a revolt, they were defeated in a great battle by Ostorius Scapula, the second Roman governor of Britain, A. D. 50, and reduced to a state of subjection. For some time after this they were treated with much favour and indulgence by the Romans, and even allowed to live under the immediate government of Prasutagus, their own native sovereign. But after the death of that prince, the Iceni were so much enraged at some grievous insults which were offered to his widow and daughters, by the lust and avarice of certain powerful Romans, that they broke out into a second revolt, much more violent than the first. In this revolt they were commanded by the celebrated Boadicea, the brave and injured widow of their late king; and being joined by several other British states, they did many cruel injuries to the Romans and their allies. But being at length entirely defeated in battle, with prodigious slaughter, by Suetonius Paulinus, A. D. 61, they were reduced to a state of total and final subjection to the Roman government; and the Romans took great pains to keep them in this state of subjection, by building many strong forts, stations, and towns in their country. (Tacit. Annal. l. xiv. c. 40, 41, 42.) The capital of the Iceni, which is called by the Roman writers Venta Icenorum, was situated at Caister, on the banks of the river Wintfar, about three miles from Norwich, where some vestiges of its walls are still discernible. Several of the Roman stations in the country of the Iceni are mentioned in the fifth Iter of Antoninus; as Villa Faulini, Icciani, Camboricum, Duroloponis, and Durobrivæ; *i. e.* St. Edmundsbury, Ickborough, Chesterford, Waltham, and Caister on the Nen. Some other places in the same country are mentioned in the ninth Iter, as Venta Icenorum, Sitomagus, and Combretonium, *i. e.* Caister, Wulpit, and Stretford. Two places on the sea-coast are mentioned in the Notitia Imperii, Branodunum and Garononum, *i. e.* Brancaffer and Yarmouth, in which strong garrisons were kept by the Romans to protect the country from the depredations of the Saxon pirates. The territories of the Iceni made a part of the Roman province Britannia Prima. Henry's Hist. vol. i.

ICESIA, an island of the Mediterranean, in the Sicilian sea. Ptolemy.

ICH-DIEN, the motto of the arms of the prince of Wales, signifying in High Dutch, *I serve*.

Sir Henry Spelman judges it to be Saxon, *Ich thien*; the Saxon *th*, with a transverse stroke, being the same with *th*; and signifying, *I serve*, or *am a servant*, as the ministers of the Saxon kings were called *thiens* or *thanes*. See CROWNS of British Princes.

ICHNÆ, in *Ancient Geography*, a town of Greece, in Macedonia, placed by Pliny on the sea-coast near the Axis.—Also, a town of Asia, in Mesopotamia, on the banks of the river Billicha, N.W. of Nicephorium. This town took part with the Romans when Crassus was defeated by the Parthians.

ICHNEUMON, in *Zoology*, the trivial or specific name of a kind of weasel that inhabits Egypt, especially on the banks of the Nile, and which is considered particularly useful in diminishing the number of that formidable creature the crocodile, by insinuating itself into the banks of the rivers or the sands, and destroying the eggs; so that it was not without reason that it was ranked by the Egyptians in the class of their deities. It is a fierce and very crafty animal, about the size of the cat, and is distinguished from the rest

of the *viverra* tribe by having the great toes remote, and the tail, which is thickest at the base, tapering gradually to the tip, which is tufted. The ichneumon is a great enemy to serpents, lizards, reptiles, insects, and other noxious animals, and is sometimes tamed by the Egyptians, and kept in their houses to destroy mice. The people call it Pharaoh's rat, and the peasants frequently bring it young to market.

According to Sonnini, neither the name ichneumon, nor that of Pharaoh's rat, is now known in Egypt. The Arabic name of the ichneumon is "Nems:" and, without doubt, it was one of the sacred animals of ancient Egypt. Particular care was taken of it while alive, and honours were paid to it after its death: funds were set apart for its support; it was fed, like cats, with bread soaked in milk, or with the fish of the Nile cut in pieces; and it was every where forbidden to kill it. With great dispositions to familiarity, says Sonnini, the ichneumon is not now domestic in Egypt. The inhabitants do not now rear them in their houses, nor do they even remember their having been so brought up by their progenitors. This writer disputes the natural antipathy to crocodiles, attributed to the ichneumon. If some ichneumons, he says, have been seen flying with fury at the little crocodiles that have been offered them, it must have been the effect of their appetite for all sorts of reptiles, and not, as many persons have supposed, that of a particular enmity, or of a law of nature, which specially directed them to stop the multiplication of this amphibious species. It would at least, continues this writer, have been as reasonable to suppose, that nature created the ichneumon on purpose to prevent the too great propagation of poultry, which, in fact, they destroy in much greater proportion than they do crocodiles. Besides, in more than half the northern part of Egypt, that is, in the part comprehended between the Mediterranean sea and the town of Siout, they are very common, although there are here no crocodiles; while they are more scarce in Upper Egypt, where crocodiles are very numerous. The ichneumon is no where more multiplied than in Lower Egypt, which being better cultivated, more inhabited, more moist, and more shady, affords also a more abundant supply of prey and food; and yet crocodiles are there never seen. The antipathy to the crocodile, erroneously ascribed to the ichneumon, belongs to a species of tortoise of the Nile, who, as soon as the young crocodiles are hatched, and reach the river, attacks and devours them. This species of tortoise is only to be found in the upper parts of the Nile, to which crocodiles are confined. This tortoise is the "therse" of the Egyptians and Nubians, and, as Sonnini conceives, has a much better title than the ichneumon to the god of the ancient Egyptians, and the wonder of writers. Sonn. Trav. in Egypt. See VIVERRA.

M. Sonnini mentions a beautiful species of ichneumon-fly, with a long and strong weapon at the extremity of the body, which sometimes enters the houses in Egypt; and which shines with the most lively colours: its head is of a beautiful emerald-green; the corselet and belly are of a glistening purple hue.

ICHNEUMON, in *Entomology*, a genus of the hymenopterous order. See WASE-ICHNEUMON Fly.

ICHOGRAPHY, in *Perspective*, the view of any thing cut off by a plane parallel to the horizon, jult at the base or bottom of it.

The word is derived from the Greek *ιχνος*, *vestigium*, *footstep*, and *γραφω*, *scribo*, *I describe*, as being a description of the footsteps or traces of a work.

Ichography is the same with what is otherwise called the *plan*, *geometrical plan*, or *ground plot*, of any thing, and is

opposed to orthography or elevation. See also SCENOGRAPHY and STEREOGRAPHY.

ICHOGRAPHY, in *Architecture*, is a transverse section of a building, exhibiting the circumference of the whole edifice, and of the several rooms and apartments in the given story; together with the thickness of the walls and partitions; the dimensions of the doors, windows, and chimneys; the projections of the columns and piers, with every thing visible in such a section.

The drawing or designing of this is properly the work of the master-architect, or surveyor; it being, indeed, the most difficult of any.

ICHOGRAPHY, in *Fortification*, denotes the plan or representation of the length and breadth of a fortress; the distinct parts of which are marked out, either on the ground itself, or upon paper.

ICHOGLANS, the grand seignior's pages, serving in the seraglio.

The word, according to some authors, is composed of the Turkish words, *ich*, or *itch*, which signifies *within*, and *oglan*, *page*; in which sense ichoglan is a page serving within the palace, or seraglio. Others derive it from the barbarous Greek *ιγκολας*, or *ιγκολος*; which was formed from the Latin *incola*. These two etymologies give nearly the same sense to ichoglan, taking *incola* for *domus incola*.

These are the children of Christians, and bred up in an austerity scarcely to be conceived. The sultan prefers them to offices more or less considerable, as they appear more or less capable, and devoted to his service; but it is to be observed, they are incapable of offices till forty years of age; unless they have some particular dispensation from the grand seignior. They are educated with a great deal of care in the seraglios of Persia, Adrianople, and Constantinople: They are under the direction of a capi aga, who presides over their exercises, and treats them with great severity. They are divided into four odas, or chambers, where, according to their several talents or inclinations, they are instructed either in the languages, religion, or exercises of the body.

ICHOR, *Ιχρσρ*, signifying any *humour* or *humidity*, properly denotes a thin, watery humour, like serum; but is sometimes also used for a thicker kind, flowing from ulcers; called also sanies.

ICHOR, in *Surgery*, signifies a thin, bloody, acrid discharge, which frequently takes place from unhealthy fores and wounds.

ICHTHYITES, in *Natural History*, is the name by which Dr. Grew denominated several fish-moulds, or impressions of fish preserved in the collection at Gresham college. "Rarities," p. 256.

ICHTHYOCOLLA, *Ιχθυοκολλη*, formed of *ιχθυς*, *fish*, and *κολλη*, *glue*, popularly called *isinglass*, or *fish-glue*, is a solid glutinous substance, prepared from a fish of the sturgeon kind, caught in the rivers of Russia and Hungary. The beluga affords the best; but the sounds of all fresh-water fish yield, more or less, fine isinglass; particularly the smaller sorts, found in prodigious quantities in the Caspian sea, and several hundred miles beyond Astracan, in the Wolga, Yaik, Don, and even as far as Siberia. It is also well known, that our lakes and rivers in North America are stocked with immense quantities of fish, said to be of the same species with those in Muscovy, and yielding the finest isinglass. The production of isinglass requires no artificial heat, neither is the matter dissolved for this purpose, as it has been generally imagined: for, as the continuity of its fibres would be destroyed by solution, the mass would become brittle in drying, and snap short asunder, which is always

always the case with glue, but never with isinglass. The latter, indeed, may be resolved into glue with boiling water, but its fibrous recombination would be found impracticable afterwards, and a fibrous texture is one of the most distinguishing characteristics of genuine isinglass. Isinglass is nothing more than certain membranous parts of fishes, divested of their native mucosity, rolled and twisted into different forms, and dried in the open air. The sounds or air-bladders of fresh-water fish, in general, are preferred for this purpose; as being the most transparent, delicate, flexible substances. These constitute the finest sorts of isinglass; those called book and ordinary staple are made of the intestines, and probably the peritonæum, of the fish. The sounds, which yield the finer isinglass, consist of parallel fibres, and are easily rent longitudinally: but the ordinary sorts are found composed of double membranes, whose fibres cross each other obliquely, resembling the coats of a bladder. Isinglass receives its different shapes in the following manner: the parts of which it is composed, particularly the sounds, are taken from the fish while sweet and fresh, slit open, washed from their slimy fordes, divested of every thin membrane which envelopes the sound, and then exposed to stiffen a little in the air. In this state they are formed into rolls about the thickness of a finger, and in length according to the intended size of the staple; a thin membrane is generally selected for the centre of the roll, round which the rest are folded alternately, and about half an inch of each extremity of the roll is turned inwards. Having thus settled the proper dimensions, the two ends of what is called the short staple are pinned together with a small wooden peg; the middle of the roll is then pressed a little downwards, which gives it the resemblance of a heart, and thus it is laid on boards, or hung up in the air to dry. The sounds, which compose the long staple, are larger than the former; but the operator lengthens this sort at pleasure, by interfolding the ends of one or more pieces of the sound with each other. The extremities are fastened with a peg like the former; but the middle part of the roll is bent more considerably downwards; and, in order to preserve the shape of the three obtuse angles thus formed, a piece of round stick is fastened in each angle with small wooden pegs, in the same manner as the ends. In this state it is permitted to dry long enough, to retain its form, when the pegs and sticks are taken out, and the drying completed. Lastly, the pieces of isinglass are joined together in rows, by running pack-thread through the peg-holes, for the convenience of package and exportation.

The membranes of the book sort being thick and refractory, will not admit the same formation; and, therefore, the pieces, after their sides are folded inwardly, are bent in the centre, in such manner, that the opposite sides resemble the cover of a book, whence its name; a peg, run across the middle, fastens the sides together, and thus it is dried like the former. The cake isinglass is formed of the bits and fragments of the staple sorts, put into a flat metal-line pan, with a very little water, and heated just enough to make the parts cohere like a pan-cake when it is dried: but this is of little value. Isinglass is best made in the summer, as frost gives it a disagreeable colour, deprives it of its weight, and impairs its gelatinous principle.

The sounds of cod and ling bear a general likeness to those of the sturgeon kind of Linnæus, and are used for the same purpose. The Newfoundland and Iceland fishermen split open the fish as soon as taken, and throw the back-bones, with the sounds annexed, in a heap; but previously to putrefaction, the sounds are cut out, washed from their slime, and salted for use. In cutting out the sounds,

the parts between the ribs are left behind, which are much the best; the Iceland fishermen are so sensible of this, that they beat the bones upon a block with a thick stick, till the *pockets*, as they term them, come out easily, and thus preserve the sound entire. If the sounds have been cured with salt, that must be dissolved by steeping them in water, before they are prepared for isinglass. The fresh sound must then be laid on a block of wood, whose surface is a little elliptical, to the end of which a small hair brush is nailed, and with a saw-knife the membranes on each side of the sound must be scraped off. The knife is rubbed upon the brush occasionally, to clear its teeth; the pockets are cut open with scissors, and perfectly cleansed of the mucous matter with a coarse cloth; the sounds are afterwards washed a few minutes in lime-water, in order to absorb their oily principle; and lastly, in clear water. They are then laid upon nets to dry in the air; but, if intended to resemble foreign isinglass, the sounds of cod will only admit of that called book; but those of ling of both shapes. The thicker the sounds are, the better the isinglass, excepting its colour; but that is immaterial to the brewer, who is its chief consumer. See Mr. Jackson's Account of the Discovery of the Manufacture of Isinglass, in Phil. Trans. vol. lxxiii. part i. p. 1, &c.

Ichthyocolla, or isinglass, is one of the purest and finest of the animal glues, of no particular smell or taste. Beaten into threads, it dissolves pretty readily in boiling water or milk, and forms a gelatinous substance, which yields a mild nutriment, and proves useful, medicinally, in some disorders arising from a sharpness and colligation of the humours. A solution of it in water, curiously spread, whilst hot, upon silk, affords an elegant sticking-plaster for slight injuries of the skin, not easily separable from the part by water, and scarcely inferior to the more compounded one sold under the name of the ladies black sticking-plaster, in which different balsams and resins are joined to the ichthyocolla. See *EMPLASTRUM adhaesivum*. Lewis's Mat. Med.

Isinglass is used in miniature painting, in the same manner as the gum Arabic or Senegal, for rendering water a proper vehicle, by giving it a due viscosity for spreading and binding the pigments of an earthy texture. But the greatest quantities of it are consumed by brewers, wine-coopers, &c. for fining their liquors. See *FINING*.

A size may be made of isinglass, by boiling half an ounce of the beaten isinglass in a pint and half of water, till the whole be dissolved, and then straining the hot fluid through a linen rag. The size may be reduced by taking half the above quantity, and adding to it an equal measure of hot water.

A very valuable glue is to be made of this drug. See *GLUE*.

It is valuable, in that it will keep also, and is a very proper form to keep isinglass in, for readiness for the wine-cooper's use; besides this it serves also very elegantly for the taking off the impressions of medals, coins, &c. See *MEDAL*.

ICHTHYOCOLLA Piscis, in *Ichthyology*, the name of a large fish, of the sturgeon or acipenser-kind; from which, as also from the *huse Germanorum*, the drug called isinglass or ichthyocolla is made. It is a fish of very great size, and is cartilaginous, having no bones or scales; its head is large and thick, and its mouth stands very forward; the upper jaw has four fleshy apophyses hanging from it; its eyes are small; its flesh is very well tasted, but glutinous; it is of a yellowish colour, and its tail is large and forked. See *BEL-LUGA-fione*.

ICHTHYODONTES, in *Natural History*, is a name by which some authors describe the glossæpetra, or fossil teeth of fish.

ICHTHYOLITE, ICHTHYOLITHUS, in *Natural History*, a name given to the fossil remains of fishes, and also to the impressions of these animals or their skeletons in stone. Some authors, however, have applied that term to such specimens only as exhibit the fish itself, either petrified or in the state of a mummy; while the name of *Tyrolites* has been proposed for such stony substances as exhibit the mere impression of those animals. The number of species of which the fossil remains have been described by naturalists is comparatively small; nor can this be a matter of surprise if we consider the extreme tenderness of the substance, and the corruptible nature of most fishes, together with the many circumstances unfavourable to petrification under which they are generally found after their death. Even those few that, by being accidentally enveloped in mud and soft clayey sediment at the bottom of the water, are preserved from passing into immediate dissolution, or from becoming the food of the inhabitants of the waters, generally leave but faint traces of their original form. Sometimes, however, we see their external appearance completely preserved, as in those of Vestena in the Veronese territory, and those in the bituminous marle-slate of Oeningen; or they appear as solitary mummies, inclosed as it were in a coffin of a grey marle, in which state the Arctic trout (*Salmo arcticus*) is frequently seen, particularly at Zuckertop, on the west coast of Greenland.

Where petrified fishes or their impressions occur in considerable number, we may always be certain that they perished by some sudden revolution or catastrophe, by which they were overwhelmed in shoals on the very spots whose geological history they now contribute to elucidate. The most extensive depositary of fossil remains of fishes is that of

Monte Bolca, or rather of *Vestena Nova*, in the Veronese territory. Vestena Nova is a district separated from Monte Bolca by the river Scaranto Maggiore, which receives the rivulets that descend from the mountains on both its sides. Within the boundaries of this place, one thousand paces from the village Bolca, and about 242 paces lower than the summit of the mountain of that name, we find the fish-quarry called *Lastrara*, being a hill whose height above the level of the sea is about 38 French toises. The rock which predominates almost in the whole of the districts of Bolca and Vestena, is basalt, both massive and prismatic. The three places in which the latter appears particularly characteristic are the Valle dei Stanghellini, mount San G. Ilarione, and the upper part of Monte Bolca, called La Purga di Bolca. The basaltic columns are in general perpendicular to the axis of the mountain; but those of San Giovanni Ilarione are rather inclined to the horizontal line, and appear to have been forced out of their original position. Besides basalt there occur other rocks in these mountains that have the appearance of being volcanic productions; such as an ash-grey conglomerate, red cellular stones like scoria, and a violet coloured indurated earth, not unlike the puzzolana of true volcanoes. Some of these masses are full of nodules of fibrous zeolite and calcareous spar; others contain fragments of feld spar and quartz, while still others exhibit an uniform solid mass without any imbedded substances. Only the first mentioned of these rocks have the appearance of productions of volcanoes; the others obviously belong to the porphyritic formation, and some of the last mentioned are hornstone. But of all the rocks just noticed, none are to be seen in the immediate neighbourhood of the immense quarries where the fishes are found. These consist chiefly of a more or less fossil marle disposed in layers which, observing

exactly the same succession in the different adjoining hills, appear to prove that these formerly constituted a continued ridge. One of the hills consists principally of a whitish, porous, friable tuff, resembling common cement; it is made up of particles of lime and sand, containing a vast number of fossil shells, particularly of *Murex aluco* and *Turbo uriscalpium*, natives of the Mediterranean, and here converted into a white marble; also of *Turbo unguinus*, *variegatus*, and *terebra* of Linnæus. In some places the tuff becomes much harder; it passes into a kind of common limestone, and is found to contain mummulariæ, and lids of shells belonging to the above species.

The *Lastrara*, or hill where the fishes are found in abundance, has for its uppermost stratum a kind of mould mixed with the detritus of basalt and other rocks. The interior consists of two distinct kinds of strata; the one called *Zengio* is a hard marle-like limestone, traversed by veins of calcareous spar: it is not divisible into thin layers, and seldom contains any petrifications. The other strata, called *Lastra*, consist of a schistose marle, divisible into very thin layers, giving out a foetid odour when rubbed. The colour of this mass is whitish, yellowish, or blueish-grey. It varies with regard to hardness, but is in general easily scraped by the knife. In this alone the remains of fishes are found, which are sometimes seen accompanied by parts of maritime algæ; at other times the sea-weeds occur separate.

The fishes in question are mostly sea-fish, but there are also some of fresh water found among them. The originals of many, if we can trust the naturalists that appear to have examined them with great care, live now in regions most remote from each other; among them are the natives of Europe, the Indian ocean, Africa, and North and South America. The remains of the fishes thus imbedded are all of a dark-brown colour, and therefore appear very distinctly on the light ground of the stone; they lie flat among the laminæ, their profile and their several parts, little, if at all, distorted from their natural shape and dimensions, except that in some cases the stone inclosing them seems to have suffered some little disturbance after their inclosure, by which they are found at times somewhat fractured, and the parts a little disjointed. Their whole form is well defined, but the harder parts, such as the head, fins, spine, with the bones that branch from it on either side, and indeed all the bones in general, as well as in some the scales, are remarkably well expressed. The dark-brown matter composing these fishes remains distinct, and may be picked off from the stone; it projects in proportion to the thickness of each part in its natural state; it is hard, brittle, and rather glossy through its substance, except in some of the grosser bones, such as the joints of the vertebræ, which, though of this appearance externally, are found, when broken, to consist internally of laminar calcareous spar. On cleaving the matrix the forms are found equally announced on each of the opposite sides, the prominences on one side being exactly answered by corresponding hollows on the other.

We cannot be too careful in determining the species of the prototypes of fossil remains; in cases, therefore, where difficulties arise with regard to their diagnosis, it is much more advisable to abstain from pronouncing with confidence than to mislead the geologist by inaccurate determination. This is more particularly the case with fossil fishes; and it is owing to the difficulties which attend their diagnosis, that the opinions of different naturalists respecting the species, or even the genus to which specimens are to be referred, have been often so very contradictory. Upon the whole it may be said, that those of the Veronese territory are determined with greater care and exactness: and it is much to be wished that the authors

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authors of the "Ittiolitologia Veronese," which contains the descriptions and figures of no more than sixteen species, all of them preserved in the Bozza collection, might have been encouraged to proceed with this highly splendid and instructive work. The just mentioned sixteen species are, 1. The shark (*Squalus carcharias*, Linn.). It has all the characters of this species, but its length is only 26 inches. 2. The winged chætodon (*Chatodon pinnatus*, Linn.) first described and figured by Scheuchzer, under the name of "Piscis fossilis elegans," and conjectured by him to be the Brazilian Guaperu described by Marcgraf. 3. The trumpet fish (*Fistularia chinensis*, Linn.). 4. The sea-needle (*Efox Brasiliensis*), considered by Bloch as a variety of *E. belone*. 5. The swimming sea-horse (*Pegasus natans*, Linn.), unique, in the Bozza collection. 6. *Uranoscopus rasstrum*. It was first considered by Bozza as the unicorn fish (*Balistes monoceros*) of Catesby: but a more close examination renders it highly probable that it is an unknown or lost species of star-gazer, to which, on account of the long serrated dorsal fin, the above specific name has been given. 7. The bat chætodon (*Chatodon vespertilio*, Bloch.). 8. The *Portavola*, a fish not before described, belonging to the order jugulares of Linnaeus, and in all probability to the genus *Kurtus*, established by Bloch. It is here called *Kurtus velifer*; it approaches very near to *Acarauna* of Willughby, and the *Spitineus* of Ruysch. 9. The arc fish (*Chatodon arcuatus*, Bloch), unique in Bozza's cabinet. 10. *Tetrodon Honckenii*, Bloch; a small species, which, in imperfect specimens, has formerly been mistaken by some for the impression of elliptic leaves, by others for tad-poles: Only a few specimens have been found in the Veronese hills. The bishop of Winchester is mentioned in the "Ittiolitologia," as having acquired at Verona a much larger and better preserved specimen than the one figured in that work. It is not found in the common grey-coloured layers of Bolca, but in the brown and ash-grey variety of marle-slate of that hill. 11. The globe-fish (*Tetrodon bispidus*, Linn.). The fossil remains of very small specimens of this fish are found only in the whitish and yellow coloured layers of marle-slate in the Lastrara. 12. A species of ray, denominated *Raja muricata* by Marcgraf, which name is here retained. The Portuguese, on account of its shape resembling that of a musical instrument, call it *Viola*: neither Linnaeus nor Bloch make mention of it; there can, however, be no doubt that it belonged to that tribe of rays which inhabit the Arabian seas, and is comprehended by Forskoal under the name of *Raja sephen*. 13. *Chatodon mesoleucus*. The prototype likewise described by Forskoal as a native of the Arabian sea, to which locality Bloch has added that of Japan; but Gmelin, considering both as distinct, calls that of Forskoal *Ch. mesoleucus*, distinguishing the Japanese fish by the specific name of *mesomelas*. 14. The argus (*Chatodon argus*, Linn.). Fortis has erroneously described this ichthyolite under the name of *Chatodon faber*. 15. *Gobius barbatus*, a new species, approaching the *G. ocellatus* of Broussonet, under which name this fossil fish has been before erroneously described by Bozza. 16. *Gobius Veronensis*. This has been considered by Fortis and Bozza as the *G. strigatus* of Broussonet: posterior observations have, however, proved it to be distinct from the last mentioned species.

To the species just enumerated, we subjoin the following systematic list of Bolca ichthyolites, in the famous collection of Signor Vincenzo Bozza, which, in 1791, was united with that of the marquis Gazola, and is now preserved in the Museum of Natural History of Paris: but whether they are as well determined as those in the "Ittiolitologia

Veronese" appear to be, remains to be ascertained by those who have made ichthyology the principal object of their researches.

1. *Fishes of European seas*.—The Rondeletian eel (*Muræna myrus*, Linn.): the Roman muræna (*Muræna Helena*, L.): *M. serpens*: *M. caeca*: the bearded eel (*Ophidium barbatum*, L.): the coal-fish (*Gadus carbonarius*, L.): the green gadus (*G. virens*, L.): the hake (*G. merluccius*, L.): the Mediterranean gadus (*G. Mediterraneus*, L.): the butterfly fish (*Blennius ocellaris*, L.): the arcolated blenny (*Blennius lumpenus*, L.): the porcine scorpenæ (*Scorpena porcus*, L.): *Scorpena scorpius*, Will.: the rufous scorpenæ (*S. scrofa*, L.): *Scorpena Salviani*, Will.: the common dory (*Zeus faber*, L.): the dab (*Pleuroneides limanda*, L.): the gilthead (*Sparus aurata*, L.): the fargy (*Sparus fargus*, L.): the pagre sparus (*Sp. pagrus*, L.): the maroon sparus (*Sp. chromis*, L.): the varying labrus (*Labrus turdus*, L.): *Scomber colias*, Will.: the common mackarel (*Scomber scomber*, L.): the bonito (*Scomber pelamis*, L.): the tunny (*Scomber thynnus*, L.): the cuckow gurnard (*Trigla cuculus*, L.): the sea-pike (*Efox sphyrona*, L.): the herring (*Clupea harengus*, L.): the common angler (*Lophius piscatorius*): the sting ray, (*Raja pastinaca*, L.)

2. *Of the Indian seas*.—The Indian dragonet (*Galyonymus indicus*, L.): the ciliated dory? (*Zeus ciliaris?* Bloch): *Zeus triurus* cui valde affinis *Z. faber*, L.: the striped chætodon (*Chatodon striatus*, L.): *Chatodon macro-lepidotus*, L.: *Chatodon*, Seba Mus. 3. t. 26. f. 23. *Chat. canescens*, L. *Chat. lineatus*, L.: *Chat. fuscus*, Seba 3. t. 26. f. 22. *Sparus argenteus*, Seba 3. t. 27. f. 13. *Labrus*, Seba 3. t. 31. f. 5, 6. *Perca*, Seba 3. t. 23. f. 3, 4. *Efox Amboinensis*, Ruysch Amb. t. 14. f. 2. The fish of Paradise (*Polynemus paradiseus*, L.): the thrissa herring (*Clupea thrissa*, L.): *Diodon*, Seba 3. t. 23. f. 3, 4.

3. *Of the African sea*.—The rough sparus (*Sparus dentex*, L.): *Ostracion turritus*, Linn.

4. *South American seas*.—The common coryphene (*Coryphæna hippurus*, L.): the Brazilian dory (*Zeus vomer*, L.): the arcuated chætodon (*Chatodon arcuatus*, L.): *Chatodon fasciatus*, L.: *Chatodon cornutus*, L.: the Curassao chætodon (*Ch. Curaçao*, L.): *Chatod. nigricans*, L.: *Chatod. triostegus*, L.: the silvery sparus (*Sparus argenteus*, L.): *Scomber cordyla*, Will. t. 5. 18. f. 1. *Scomber coorza pisonis*, Will. t. M. 5. f. 2. The bagre filurus (*S. bagre*, L.): *Loricaria plecostomus*, L.: The Seban polyneme (*Polynemus quinquarius*, L.): *Polynemus plebeius*, Brouff.: the round diodon (*Diodon orbicularis*.)

5. *North American seas*.—The toad gadus (*Gadus tau*) Will. t. N. f. 3.): *Chatodon chirurgus*, L.: the Carolina stickleback (*Gasterosteus Carolinus*, L.): the Canada stickleback (*G. Canadus*, L.): *Perca venenosa*, L.: *Perca trifurca*, L.: the tobacco-pipe fish (*Fistularia tabacaria*, L.): *Efox*, Catesb. t. 1. f. 1. *Elops saurus*, L.: the oceanic flying fish (*Exocoetus evolans*, L.)

The above described place, where these remarkable petrifications are found in such abundance, has become the subject of much speculation with the naturalists of modern times. Arduino was one of the first writers who produced some very ingenious conjectures, to prove the volcanic origin of that hilly district; and his theory was afterwards supported by Ferber, Fortis, Strange, Dolomieu, Patrin, and others; the leading feature of whose system, with regard to the preservation of the fishes and other marine productions, was the supposition that the whole tract where they are found, anciently constituting the bottom of the

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sea, was raised by the action of subterraneous fire. Notwithstanding the plausible reasons that have been given by those naturalists in favour of the volcanic origin of the Bolca fishes, there are several very respectable writers, and among them the author of the "Ittiolitologia Veronese," who, after a minute examination into the nature of those hills, and the circumstances under which the fossil remains occur in them, have not hesitated to pronounce them of Neptunian origin. Their observations lead them to suppose, that the district of Vestena and Bolca is the result of a widely extended deluge, which collected the fishes, shells, and plants of distant parts of the globe into one common sea; and that successive partial inundations, together with the occasional ignition of the inflammable substances previously deposited, produced the volcanic appearance of the masses of rocks above those strata which contain the remains of fishes, and which are totally destitute of the characteristics of volcanic productions.

The ideas which Mr. Graydon has offered on this subject, in the Transactions of the Royal Irish Academy are, in substance, as follows. The very perfect preservation of the living form observable in the specimens from Vestena and Bolca, appears to prove that the fishes could not have been long dead, before they were enveloped by the calcareous marle, which must have been suspended in the water, and, on subsiding, have caught and enclosed the fish which probably derived their death from this very cause. The bodies of these animals did not undergo any simultaneous putrefaction, but their oily and other soft parts were absorbed by the enclosing mass. This stony substance being for the greatest part calcareous, Mr. Graydon supposes that a vast body of it, previously calcined or reduced into quick lime by the agency of subterraneous fire, again passed into the state of slacked lime, as soon as it came into contact with the waters, from which subsiding it gradually and successively concreted at the bottom, and assumed the structure of a schistose mass, which becoming afterwards impregnated with the oily parts of the fish, acquired the foetid smell which it is still found to emit on being scraped with a harder substance. It is highly probable to the same author, that these masses, in their original position, must have formed part of a continued and horizontal stratum of very considerable extent, of which the quarries of Bolca are evidently to be considered as no more than portions or fragments, now completely disjoined from all connection with their native bed. This separation must have happened after the consolidation of the original stratum; for it could not have taken place in the yet soft and yielding substance, without producing a considerable disturbance both in the laminar structure of the mass, and in the forms of the fishes. It would therefore seem, that, at some subsequent period, the whole of the stratum was violently broken up, and immense fragments of it heaved from their natural situation, and dispersed here and there as in the instance before us. The author considers the eruptive force of subterraneous fire fully adequate to producing these effects, though he allowed, that it must have operated in the present case with a force much exceeding whatever has been experienced in the known history of volcanoes.

In whatever manner we explain the phenomenon of the Bolca fishes, it will always be found extremely difficult to account for the collection, in one spot, of so many fishes from various parts of the globe most remote from each other, and among them some which live in fresh water. Indeed, this difficulty appears so great, that we are almost inclined to suspect the accuracy of the observations made to ascertain the originals of these fossil fishes, and

that many of them should be considered rather as approaching to, than as being the same with, the species to which they are referred by authors.

We subjoin, from Patrin's account, what relates to the ichthyolites of the gypsum quarries of Aix, in Provence, which are not less remarkable than those of Vestena and of Oeningen. The strata that are open to view in descending by 110 steps, into the interior of the mountain at Aix, are seven in number: 1. A kind of marle-slate, called *argile feuilletée* by the miners: it is of a brownish-yellow colour, and when immersed in water, separates into very delicate layers. 2. The white stone (*Pierre blanche*), a chalk like marle, which, when dissolved in acids, leaves a considerable quantity of a brownish-grey clay. 3. Hard clay (*argile dure*). 4. The black stone (*Pierre noire*), a variety of marle-slate, perfectly like that of N^o 1, but full of rhomboidal selenite crystals. 5. The stratum containing the impressions of fishes; it is a schistose rock of a yellowish-grey colour, soft, rather soiling, divisible into thin layers, and giving out a slightly bituminous smell when scratched. 6. Bed of gypsum; and 7. A stratum of what is called by the quarriers *Pierre froide*, a substance which much resembles that of N^o 3; both are of a greyish-white colour, have a nearly conchoidal fracture, adhere but little to the tongue, and feel cold; they both dissolve with effervescence, but leave a great proportion of clay. Lower down the same succession of strata is continued, but no impressions of fishes are found in any of them. The fishes buried in the stratum, below the gypsum, are, according to Darluc, the red surmullet (*Mullus barbatus*, L.); the lunated gilt head (*Sparus aurata*, L.); sea-wolves; the whiting (*Gadus merlangus*, L.); a gurnard (*Trigla*), which resembles, but still appears to be distinct from, the *Trigla cataphracta*, a native of the Mediterranean, on the coast of Provence. All these fishes lie flat on their sides, as a proof that they perished on the very spot they now occupy. Patrin is of opinion that these fishes have been suffocated by the sulphureous vapours which, by their combination with lime, have formed the upper stratum of gypsum; that, however, at the time when similar emanations formed the older strata of gypsum, the waters of the ocean still covered the high land which encompassed this tract, so that the fishes were enabled to escape, and that none were suffocated but at a period when, by the diminution of the sea, this same tract of country was become surrounded by coasts that checked the flight of the fishes.

A great number of impressions of fishes are found in the quarries of Oeningen on the right bank of the Rhine. The strata observed there below the vegetable mould, which is white and clayey, are, 1. A stratum, only one inch thick, of friable and fine-grained sand-stone, composed of transparent sharp-edged grains of quartz, cemented by a mixture of clay and lime. 2. A layer of a compact clay, four inches in thickness, effervescing with acids. 3. A layer, twenty-six inches thick, of a slaty clay mixed with lime, and some bitumen. 4. A layer of one foot in thickness, of a yellowish-grey calcareous schistus, intermixed with minute layers of clay, of a dark-grey colour, and containing a small portion of bitumen. 5. A bed, eight feet thick, composed of clay slate, divisible into fine laminæ, and alternating with soft clay, which has no slaty structure. 6. The slaty rock contains the impressions of fishes, and which is called *bonne Pierre* by the quarriers. It is composed of strata, which together form a thickness of twelve feet, and each of them is separated from the upper and lower by some earth, impregnated with bitumen. It is easily divisible into laminæ, on which are discovered the impressions of the fish. This slaty

slaty stone is pretty soft, although it is as sonorous as a brick : it adheres to the tongue, and when dissolved in acids, leaves a considerable proportion of clay. Beneath these layers, of 12 feet in thickness, there are four inches of a similar slaty mass, which, however, contains no impressions. Dr. Lavater possessed a rich collection of ichthyolites of Oeningen, among which he has recognized the following species: the lesser lamprey (*Petromyzon fluviatilis*); the common eel (*Muræna anguilla*); the bull-head (*Cottus gobio*); the brill (*Pleuro-neñus rhombus*); the scad (*Scomber trachurus*); the mailed gurnard (*Trigla cataphracta*); the lucerna-gurnard (*T. lucerna*); the thorny leach (*Cobitis taenia*); the leach (*C. barbata*); the trout (*Salmo fario*); the pike (*Esox lucius*); the herring (*Clupea harengus*); the shad (*C. alosa*); the bream (*Cyprinus brama*); the minnow (*C. phoxinus*); the dobule (*C. dobula*); the crucian (*C. carassius*); the borderliere (*C. blica*); the dotted carp (*C. bipunctatus*); the bitterling (*C. amarus*); *Cyprinus lifella*; the round-tailed chub (*C. cephalus*); the loach (*C. rutilus*); grislæan carp (*C. grislægine*); the bleak (*C. alburnus*); the dace (*C. leuciscus*); the tench (*C. tinea*); the nase (*C. nasus*); the common carp (*C. carpio*); the gudgeon (*C. gobio*).

The Hessian ichthyolites, particularly those found at Riegelsdorf, in bituminous marle-slate, are more particularly remarkable on account of the distorted forms exhibited by the fishes, with whose impressions it abounds. This circumstance, and the great quantity of copper found in that rock, have induced a belief that the death of these fishes was occasioned by a sudden impregnation of the waters with a cupreous solution. It is worth observing that the more the impressions of fish abound in any particular part of the strata of marle-slate, the richer these are found to be in copper ores. Mr. Rieff has given an account of the succession of the stetz strata at Riegelsdorf, which are the following: N^o 1. Ferruginous clayey mould, from one to two fathoms. N^o 2. Greyish-white limestone from 6–8 fathoms. N^o 3. Blue clay, with imbedded fragments of selenite crystals; 8–10 fathoms. N^o 4. Blueish limestone, called *Rauch-wacke*; 8–9 fathoms. N^o 5. Grey compact gypsum, traversed by ferruginous loam; 7–8 fathoms. N^o 6. Black and grey slinkstone; 1–1½ fathom. N^o 7. Sand, sometimes loose, sometimes cemented; 1–1½ fathom. N^o 8. A kind of limestone called *Zech-slein*, of a greyish-brown colour, and soft above towards the sand, but blacker and more compact below; 3¼–3½ fathoms. N^o 9. A black slaty stratum, containing pyrites, and forming the roof of the bituminous marle-slate; 18–20 inches. N^o 10. Black cupiferous bituminous marle-slate; 3–8 inches: this is the principal depositary of the ichthyolites. N^o 11. Gneiss-like greyish-white rock, consisting of small rounded quartz pebbles, and sometimes of fragments of jasper and mica, cemented by indurated clay; 6–18 fathoms. N^o 12. Old red sandstone, or the dead rock, being the fundamental rock of these stetz strata. From the above it appears that the greater part of the impressions of fishes, plants, and other subjects (among which Mr. Rieff supposed to have found the skeleton of the hand of a child, but which Blumenbach considered as having belonged to a species of ape), are found in the depth of upwards of forty fathoms. Most of the fishes occurring there are carps, trouts, pikes, and other species similar to them, which are now and then accompanied by fishes supposed to be marine. In general the impressions are not indifferently mixed, as is the case in other places where ichthyolites occur, but each species is found in distinct shoals.

The opinion which Mr. Patrin, a celebrated volcanist, en-

tertains respecting the origin of those vast depositaries of the fossil remains of fishes, should not be left unnoticed in this place. According to him, all circumstances appear to prove that these fishes lived in bays and gulfs, at the entrance of which volcanoes were situated either in the points that formed the mouth, or in some island, similar to the volcanic island of Ischia, at the entrance of the gulf of Naples. Under such circumstances, the sulphureous and other deleterious vapours which were disengaged from the submarine bases of the volcano, at the time of an eruption, must have suffocated the fishes in the gulf, which were prevented from escaping through its entrance where those vapours were most abundant. The dead bodies of these fishes, therefore, floated on the surface of the water in the gulf, till, enveloped by those showers of ashes, so abundant at the beginning and termination of the eruptions, their specific gravity became greater than that of the water, and they sunk to the bottom, where they were ultimately buried under a stratum formed by the ashes or other substances ejected from the volcanoes. In cases where the gulf had but little depth, at the same time that the volcanic ejections were abundant, the fishes were enveloped at once, and formed but a single bed, such as may be seen in some places where ichthyolites occur. Under other circumstances the eruptions may be supposed to have been repeated for several times, in which case several beds containing bodies of fishes were deposited in succession, and separated from each other by layers destitute of such remains, but nevertheless owing their origin to the same eruption that caused the death of the fishes contained in the others.

These events, Mr. Patrin continues, could take place only at a period when the continents were already sufficiently raised or emerged to give existence to gulfs and bays, whose sides, elevated above the surface of the water, served as a barrier to the fishes; since it is evident that these, had the present shores been still covered by the sea, would have escaped in all directions from the effects of the suffocating vapours. This hypothesis, the same author thinks, is supported by the following circumstances: 1. It is only in a few places that we find beds filled with fossil fishes; and the appearance of such places bespeaks the former existence of volcanoes in them. 2. The bodies of these fishes are in perfect preservation, disposed with great regularity, often even united in tribes; which proves their having been suddenly destroyed and buried under the stratum which now covers them. 3. They are not unfrequently seen in variously contorted shapes; as a proof that their death was attended with convulsive motions. 4. These fossil remains of fishes are found only in strata of very recent origin; whereas, had they been preserved under ordinary circumstances, like shells and zoophytes, they would be found in a variety of localities, and in strata of much less recent formation than those in which they now occur.

ICHTHYOLOGISTS, authors who have written concerning fishes. The authors who have left us treatises on this subject are very numerous; and are ranged by Artdi into their several proper classes, with great care and candour.

The systematical ichthyologists are Aristotle, Pliny, Isidore, Albertus Magnus, Gaza, the interpreter of Aristotle, Marshell, Wootton, Bellonius, Rondeletius, Salvian, Gesner, Aldrovand, Johnston, Charlton, Willughby, Ray, Artdi, and Linnæus.

The ichthyologists who have written of the fishes only of some particular places, are these: Ovid, of the fishes of the Euxine; Oppian, of those of the Adriatic; Aulenus, of those of the Moselle; Mangolt, of those of the Podamic lake; Paulus Jovius, of those of the Tyrrhene sea; Bened:

Jovius, of those of the lake Larius; Petrus Gillius, of those of the Massilian sea; Figulus, of those of the Moselle; Salvian, of those of the Tyrrhene sea; Schwenkfeldt, of those of Silesia; Schonefeldt, of those of Hamburg; Margrave, of the Brasilian fishes; Ruysel, of those of Amboyna; and Francis Valentine, of those of the same place. Of these authors, Ovid, Aufonius, Oppian, and Bened. Jovius, wrote in verse, the rest in prose.

The ichthyologists, who have copied all they have written from the works of other writers, and therefore least deserve the name, are the following: Pliny, Ælian, Athæneus, Isidore, the author of the "Libri De Natura Rerum," Albertus Magnus, Johannes Cuba, Marschall, Gesner, in great part, Aldrovand in great part, Johnston, Charlton, and perhaps some others.

In regard to method, some have written of fishes without any method at all; some have treated of them in the alphabetical order of their names, and some have followed a method more or less perfect throughout their works.

Those ichthyologists who have attended to no method at all, are Ovid, Ælian, Athæneus, Aufonius, Hildegard, De Pinguia, Paulus, and Bened. Jovius, Figulus, Salvian in his "History of the Roman Fishes," and Ruysch.

Those who have written alphabetically, are Cuba, Marschall, Salvian in his "Tabula Piscatoria," Gesner, Schonefeldt, Johnston.

Among the authors who have used some sort of method, those come first who have treated of fishes according to the places where they are usually caught. Of these are Oppian, Rondeletius, Aldrovand, Johnston, and Charlton.

Those who have treated of fishes, according to the general division of them into cetaceous, spinose, and cartilaginous, are Aristotle, who was author of the method, Wootton, Willughby, Ray; the last two authors have added to this the numbering the rays of the fins on the back, which is one step towards the Artedian method.

The principal and best authors in this study, and who have reformed and amended it, are Aristotle, Bellonius, Rondeletius, Salvian, Gesner, Willughby, and Ray. To these are to be added such as have described only new or particular fishes, who have merited greatly of the world by the new lights they have thrown in upon this part of natural history. These are Paulus Jovius, Petrus Gillius, Schonefeldt, Sibbald; Marsigli, Hebenstreit, and our countryman Mark Catesby: all the rest, except Pliny, Athæneus, Aldrovand, and Johnston, are of no use or value. Willughby is allowed by Artedi to be by far the best author on the subject; but the world will now give that character to Artedi himself. Artedi, De Script. Ichthyol.

ICHTHYOLOGY, in *Natural History*, the science of fishes. See PISCES.

ICHTHYOMANTIA, ἰχθυομαντεία, in *Antiquity*, a species of divination by means of the entrails of fishes.

ICHTHYOMORPHUS, in *Natural History*, is the name which Aldrovandus gave to the flattened fossil fish, found at Isleb in Germany. Similar fossils are found at Osterode in Brunswick, near Eisebe, in Mansfield county, and other places in Germany. Jones's *Phys. Disq.* p. 410.

ICHTHYOPHAGI, ἰχθυοφαγοί, compounded of ἰχθυός, *fish*, and φαγεῖν, *to eat*, *fish-eaters*, a name given to a people, or rather to several different people, who lived wholly on fish.

The Ichthyophagi, spoken of by Ptolemy, are placed towards China. Agatharchides calls all the inhabitants between Carmania and Gedrosia by the name of Ichthyo-

phagi. Pausanias places them near the Red sea, and Pliny peoples several isles with them to the east of Arabia Felix.

From the accounts given us of the Ichthyophagi by Herodotus, Strabo, Solinus, Plutarch, &c. it appears, indeed, that they had cattle, but that they made no use of them, excepting, as they say, to feed their fish. They made their houses of large fish-bones, the ribs of whales serving them for their beams. The jaws of these animals served them for doors; and the mortars wherein they pounded their fish, and baked it in the sun, were nothing else but their vertebrae.

ICHTHYOPHTHALMITE; *Zeolite of Hellesta*, Rinmann; *Ichthyophthalmite*, d'Andrada; *Fischaugen-stein*, Wern.; *Apophyllite*, Häüy.

A rare mineral substance, which, on account of one of its chemical characters, has been considered as zeolite by some mineralogists; while one of its external characters, *viz.* the pearly lustre, has induced others to class it with adulariafeldspar. A closer examination has proved this mineral to constitute a distinct species.

D'Andrada has given the above appellation to this mineral, on account of its exhibiting a similar reflection to that of the adularia or moon-stone, sometimes called *œil de poisson*, of which the German *fischaugen-stein* is a translation. Häüy's name is derived from the property this substance has of exfoliating under certain circumstances.

The colour of the ichthyophthalmite is white, generally slightly tinged with red, grey, and blue, seldom with yellow and green.

It occurs massive and crystallized. The primitive form of its crystals is, according to Häüy, a four-sided prism with rectangular base. The simplest of the secondary forms is the primitive parallelepipedon, with its eight solid angles intercepted each by a triangular plane; the *Apophyllite épointé* of Häüy.

Another, but very complicated, variety of 48 planes, determined from an incomplete crystal of only ten remaining planes, is characterized and figured, (*Journ. des Min.* vol. 23, 5. f. 3, 4.) by Häüy, who calls it *Apophyllite sur-composée*.

None of the modifications of the crystals have hitherto been found in a complete state; most frequently they occur as thick tables, grown together in all directions, or intersecting each other, and resembling at first sight a variety of tabular barytes. They are splendid, and generally exhibit more or less the lustre of mother-of-pearl; in the manner of a variety of stibite.

The fracture, parallel to two of the planes of the primitive parallelepipedon, is foliated, with splendid often iridescent surface; cross-fracture uneven with vitreous lustre.

In small fragments it is generally perfectly transparent, but often rendered translucent only, and even nearly opaque, by a cloudy or milky suffusion. Refraction simple.

It is easily frangible. Its hardness is nearly that of fluor spar. A small fragment, when rubbed on a hard body, according to Häüy, separates into thin leaves; this property is, however, not observable in all specimens.

Its specific gravity, according to Vauquelin and Fourcroy, is 2.467.

Before the blow-pipe the ichthyophthalmite becomes at first opaque, and melts, without difficulty, into a very white opaque globule. With nitric or muriatic acid it becomes softened, and forms a jelly, like zeolite. This property appears to be owing to the presence of water, which facilitates the action of the acids on those constituent parts of the substance with which they can unite.

Analyses of the Ichthyophthalmite.

| | Rimann. | Foureroy and Vauquelin. | Rose. |
|----------|---------|-------------------------|--------|
| Silica | 55.00 | 51.00 | 55.00 |
| Lime | 27.00 | 28.00 | 25.00 |
| Magnesia | 0.50 | | |
| Potassa | | 4.00 | 2.25 |
| Alumine | 2.50 | | |
| Water | 17.00 | 17.00 | 15.00 |
| Lofs | | | 2.75 |
| | <hr/> | <hr/> | <hr/> |
| | 102.00 | 100.00 | 100.00 |

This substance, therefore, differs essentially from zeolite, in not containing the least portion of alumine; the variety from Helleita has, indeed, afforded a small quantity to Mr. Rimann, but this appears to be accidental. A small quantity of oxyd of iron found in this substance may likewise be considered as accidental.

This mineral is found in the iron-mines of Uto, in Sudermania, a province of Sweden.

ICHTHYOSIS, in *Medicine*, *fish-skin disease*, from $\iota\chi\theta\upsilon\varsigma$, a *fish*, a denomination appropriately used by Dr. Willan to designate "a permanently harsh, dry, scaly, and in some cases, almost horny texture of the integuments of the body, unconnected with internal disorder," bearing a considerable resemblance to the skin of the scaly fishes.

This rare species of cutaneous disease constitutes the fourth genus of the second Order, (or *scaly eruptions*), in Dr. Willan's arrangement, and is distinguished from the other eruptions, included in the same Order, the *Lepra* and *Psoriasis*, in being generally diffused over the limb affected, and in the permanency of its scales; for in the other scaly eruptions alluded to, the diffusion is partial, or in distinct patches, and the scales are deciduous. See LEPROSY and PSORIASIS.

The arrangement and distribution of the scales in ichthyosis are, indeed, peculiar. Above and below the *olecranon* on the arm, and in a similar situation with respect to the *patella* on the thigh and leg, they are small, rounded, prominent, or papillary, and of a black colour. Some of the scaly *papilla* have a short narrow neck, and broad irregular tops. On some parts of the extremities, and on the trunk of the body, the scales are flat and large, often placed like tiling, or in the same order as scales on the back of a fish; but in a few cases they have appeared separate, being intersected by whitish furrows. There is usually in this complaint a dryness and roughness of the soles of the feet; sometimes a thickened and brittle state of the skin in the palms of the hands, with large painful fissures, and on the face an appearance of scurf rather than of scales. The inner part of the wrists, the hams, the inside of the elbows, the furrow along the spine, the inner and upper parts of the thighs, are perhaps the only portions of the skin always exempt from scalyness. Patients affected with ichthyosis are occasionally much harassed with inflamed pustules, or with large painful bites on different parts of the body; it is also remarkable, that they never seem to have the least perspiration or moisture of the skin.

The *causes* of ichthyosis seem to be altogether unknown. The disease did not, in any case witnessed by Dr. Willan, appear to have been transmitted hereditarily; nor was more than one child from the same parents affected with it. In several instances it was said to have been connate, and in others to have occurred two or three months after birth; in one case it appeared soon after the small-pox, at the age

of two years, and had continued six or seven years, without alteration. A state of skin, similar to that in ichthyosis, takes place partially under a variety of circumstances. It occurs on the limbs of persons who, from long continued ill health, or a weakly constitution, are much emaciated, and have little perspiration. When inveterate ulcers on the lower extremities are at length healed, the common integuments are not replaced in their usual order: instead of cuticle, the legs are covered with thick, dry, shining scales, variously disposed. In cases of anasarca, likewise, the skin becomes scaly, rigid, and inelastic. This rugged coating prevents for a time any farther enlargement of the limbs; but the effused lymph, by its gradually increasing pressure, at last overcomes the resistance, and is discharged through innumerable crevices.

According to Buffon, the inhabitants of Paraguay are much affected with the ichthyosis, or a complaint much resembling it. "Il regne parmi eux une maladie extraordinaire; c'est une espèce de lèpre qui leur couvre tout le corps, et y forme une croute semblable à des écailles de poisson; cette incommodité ne leur cause aucune douleur, ni même aucun autre dérangement dans la santé." (Hist. Naturelle, tom. iii. p. 507.) Some observations on a diseased state of the skin, analogous to the ichthyosis above described, appear in the Philosophical Transactions, vol. xiv. N^o 160; and a striking instance of the same, though somewhat differently modified, is inserted in the same collection, N^o 424, the sequel of which is given in vol. xlix. (part i. for the year 1755.) See also a case slightly detailed by Panarolus (Pentecôte, v. obs. 9.), and another related by Stalpart Vander Wiel, obs. 35. cent. ii.

With respect to the cure, little more seems to be known than of the causes of this eruption. Dr. Willan merely observes, that, when a portion of the hard scaly coating is removed, it is not soon produced again. The easiest mode, he says, of removing the scales, is to pick them off carefully, with the nails, from any part of the body while it is immersed in hot water. The layer of cuticle, which remains after this operation, is harsh and dry; and the skin did not, in the cases attended by him, recover its usual texture and softness; but the scales were prevented from forming afterwards, by the repeated use of the warm bath, along with moderate friction.

The disease above described is the *Ichthyosis simplex* in Dr. Willan's nomenclature; but he describes another species, which he terms *I. cornea*. This, which he has never seen, is mentioned by authors as "a horny rigidity of the integuments, impeding the motion of the muscles and joints;" and as affecting the lips, prepuce, toes, fingers, &c.; and sometimes as extended over the whole body. A singular case of the latter description is recorded in the Philos. Trans. vol. xlvi. part ii. p. 580. This form of ichthyosis, Dr. Willan remarks, is sometimes attended with the production of *horns*; a proof that those singular excrescences may be cutaneous, or perhaps cuticular, and generated in nearly the same manner as the nails from the human body, or the hoofs and claws of quadrupeds. An account of a girl, whose body was nearly covered with horny excrescences, is given in the Phil. Trans. N^o 176. And a horn, similar to those here described, together with a portrait of the woman on whom it grew, is preserved in the British Museum. See Willan on Cutan. Dif. order ii. p. 197, et seq.

ICHTHYOSPENDYLA, in *Natural History*, is the name by which Mr. Lhuys denominates the vertebrae, or joints of the back bones of fishes. Lithophyl. tab. 18.

ICHTHYPERIA, the name given by Dr. Hill to the bony palates of fishes, which are frequently found fossil at great

great depths in the earth, and usually immersed in the strata of stone; and in this state had been named by Mr. Lhuys, from their resemblance in shape to the pods of lupines, and some of the other leguminous plants, *siliquastra*.

Many from this name, and this casual resemblance to the pods of plants, have been misled into the believing them fossils of vegetable origin. But they have plainly all of them been the bony coverings of different parts of the mouths of certain fish of the cartilaginous, and perhaps other kinds, whose principal food being shell-fish, these bony palates were necessary to the eating of them. Many of the ichthyeria are found indeed plainly worn and rounded by use.

They are sometimes found in their fossil state joined to one another; but commonly in single pieces or joints, or in fragments of such. They are of the same substance with the bufoſites, and their shape depends on the species of fish, or part of the mouth, to which they belonged. But their most usual figure is that of half the shell of the pod of a lupine. Their sizes are various, from the tenth of an inch to two inches in length, and an inch in breadth. Their surface is sometimes smooth and polished; sometimes finely striated or sinuated, and sometimes wholly covered with tubercles. They are also found of very different colours; but most frequently either black, or of a dark chestnut colour.

They are found lodged and bedded in the strata of stone, in Germany, Italy, and France, and in the islands of the Archipelago, and in Syria among the spines of the echini; but they are nowhere so frequent as in England, there being with us very few quarries of stone which do not afford more or less of them. Hill's Hist. of Fossils, p. 645.

ICHTHYS, *ἰχθύς*, in *Antiquity*, a famous acrostic of the Erythraean sibyl, mentioned by Eusebius and St. Austin; the first words of every verse of which made up *Ἰησοῦς Χριστὸς Θεὸς υἱὸς πατρὸς, Jesus Christus Dei filius, servator*, the initial letters of which compose the word *ichthys*, *ἰχθύς*.

ICHTHYS, in *Ancient Geography*, a promontory of the Peloponnesus. Ptolemy.

ICICA, in *Botany*, Aublet. Guian. t. 130—135. See AMYRIS.

ICICA, in the *Materia Medica*, a name given by some to the gum elemi.

ICICARIBA, in *Botany*, a name used by some authors for the tree which affords us the gum elemi, used in medicine.

ICOCA, the name of a genus of plants, described by Plumier; since called by Linnæus *chrysoalanus*.

ICOLM-KILL, in *Geography*. See IONA.

ICON, in *Natural History*, signifies a figure, cut, or engraving, of any subject in natural history.

ICON, *εἰκων*, in *Rhetoric*, the same with image.

ICONIUM, in *Ancient Geography*, a town of Cappadocia, in the department of Lycaonia. In the time of Xenophon it belonged to Phrygia. This town still subsists under the name of Konieh, or Cogni.

ICONOCLASTS, or ICONOCLASTÆ, formed from *εἰκων*, *image*, and *κλαίω*, *to break*, in *Ecclesiastical History*, breakers of images; a name which the church of Rome gives to all who reject the use of images in religious matters.

In this sense, not only the reformed, but some of the eastern churches, are called iconoclasts, and are all esteemed by them heretics, as opposing the worship of the images of God, and the saints, and breaking their figures and representations in churches.

The opposition to images began in Greece under the reign of Bardanes, who was created emperor of the Greeks

a little after the commencement of the eighth century when the worship of them became common. (See IMAGE.) But the tumult occasioned by it was quelled by a revolution, which, in 713, deprived Bardanes of the imperial throne. The dispute, however, broke out with redoubled fury under Leo the Isaurian, who issued an edict in the year 726, abrogating, as some say, the worship of images, and ordering all the images, except that of Christ's crucifixion, to be removed out of the churches; but according to others, this edict only prohibited the paying to them any kind of adoration or worship. This edict occasioned a civil war, which broke out in the islands of the Archipelago, and, by the suggestions of the priests and monks, ravaged a part of Asia, and afterwards reached Italy. The civil commotions and insurrections in Italy were chiefly promoted by the Roman pontiffs, Gregory I. and II. Leo was excommunicated, and his subjects, in the Italian provinces, violated their allegiance, and rising in arms, either massacred or banished all the emperor's deputies and officers. In consequence of these proceedings, Leo assembled a council at Constantinople in 730, which degraded Germanus, the bishop of that city, who was a patron of images; and he ordered all the images to be publicly burnt, and inflicted a variety of severe punishments upon such as were attached to that idolatrous worship. Hence arose two factions; one of which adopted the adoration and worship of images, and on that account called *iconoduli* or *iconolatre*; and the other maintained that such worship was unlawful, and that nothing was more worthy the zeal of Christians than to demolish and destroy those statues and pictures, which were the occasions of this gross idolatry; and hence they were distinguished by the titles of *iconomachi*, from *εἰκων*, *image*, and *μαχία*, *I contend*, and *iconoclastæ*. The zeal of Gregory II. in favour of image-worship, was not only imitated, but even surpassed by his successor Gregory III. in consequence of which the Italian provinces were torn from the Grecian empire.

Constantine, called Copronymus, from *κοπρός*, *stercus*, and *ωνυμ*, *name*, because he was said to have defiled the sacred font at his baptism, succeeded his father Leo in 741, and in 754 convened a council at Constantinople, regarded by the Greeks as the seventh œcumenical council, which solemnly condemned the worship and use of images. Those who, notwithstanding this decree of the council, raised commotions in the state, were severely punished; and new laws were enacted, to set bounds to the violence of monastic rage. Leo IV. who was declared emperor in 775, pursued the same measures, and had recourse to the coercive influence of penal laws, in order to extirpate idolatry out of the Christian church. Irene, the wife of Leo, poisoned her husband in 780; assumed the reigns of empire during the minority of her son Constantine, and in 786 summoned a council at Nice in Bithynia, known by the name of the second Nicene council, which abrogated the laws and decrees against the new idolatry, restored the worship of images and of the cross, and denounced severe punishment against those who maintained that God was the only object of religious adoration. In this contest, the Britons, Germans, and Gauls, were of opinion, that images might be lawfully continued in churches, but they considered the worship of them as highly injurious and offensive to the Supreme Being. Charlemagne distinguished himself as a mediator in this controversy: he ordered four books concerning images to be composed, refuting the reasons urged by the Nicene bishops to justify the worship of images, which he sent to Adrian, the Roman pontiff, in 790, in order to engage him to withdraw his approbation of the decrees of the last council of Nice. Adrian wrote an answer;

answer; and in 794, a council of three hundred bishops, assembled by Charlemagne at Francfort on the Maine, confirmed the opinion contained in the four books, and solemnly condemned the worship of images. In the Greek church, after the banishment of Irene, the controversy concerning images broke out anew, and was carried on by the contending parties, during the half of the ninth century, with various and uncertain success. The emperor Nicephorus appears, upon the whole, to have been an enemy to this idolatrous worship. His successor, Michael Curopalates, surnamed Rhan-gabe, patronized and encouraged it. But the scene changed on the accession of Leo the Arminian to the empire; who assembled a council at Constantinople in 814, that abolished the decrees of the Nicene council. His successor Michael, surnamed Balbus, disapproved the worship of images, and his son Theophilus treated them with great severity. However, the empress Theodora, after his death, and during the minority of her son, assembled a council at Constantinople in 842, which reinstated the decrees of the second Nicene council, and encouraged image worship by a law. The council held at the same place under Photius, in 879, and reckoned by the Greeks the eighth general council, confirmed and renewed the Nicene decrees. In commemoration of this council, a festival was instituted by the superstitious Greeks, called the Feast of Orthodoxy. The Latins were generally of opinion, that images might be suffered as the means of aiding the memory of the faithful, and of calling to their remembrance the pious exploits and virtuous actions of the persons whom they represented; but they detested all thoughts of paying them the least marks of religious homage or adoration. The council of Paris, assembled in 824 by Lewis the Meek, resolved to allow the use of images in the churches, but severely prohibited rendering them religious worship. Nevertheless, towards the conclusion of this century, the Gallican clergy began to pay a kind of religious homage to the images of saints, and their example was followed by the Germans, and other nations. However, the iconoclasts still had their adherents among the Latins; the most eminent of whom was Claudius, bishop of Turin, who, in 823, ordered all images, and even the crosses, to be cast out of the churches, and committed to the flames; and he wrote a treatise, in which he declared both against the use and worship of them. He condemned relics, pilgrimages to the Holy Land, and all voyages to the tombs of saints; and to his writings and labours it was owing, that the city of Turin, and the adjacent country, was, for a long time after his death, much less infected with superstition than the other parts of Europe. The controversy concerning the sanctity of images was again revived by Leo, bishop of Chalcedon, in the eleventh century, on occasion of the emperor Alexius's converting the figures of silver, that adorned the portals of the churches, into money, in order to supply the exigencies of the state. The bishop obstinately maintained, that he had been guilty of sacrilege; and published a treatise, in which he affirmed, that in these images there resided an inherent sanctity, and that the adoration of Christians ought not to be confined to the persons represented by these images, but extended to the images themselves. The emperor assembled a council at Constantinople, which determined, that the images of Christ and of the saints were to be honoured only with a relative worship; and that invocation and worship were to be addressed to the saints only as the servants of Christ, and on account of their relation to him, as their master. Leo, dissatisfied even with these absurd and superstitious decisions, was sent into banishment. In the western church, the worship of images was disapproved and opposed by several considerable parties, as the

Petrobrussians, Albigenes, Waldenses, &c. till at length this idolatrous practice was entirely abolished in many parts of the Christian world by the Reformation. Mosheim's Eccl. Hist. vol. ii. See IMAGE.

ICONOGRAPHIA, *Εικονογραφία*, derived from *εικων*, *image*, and *γραφω*, *I describe*, the description of images, or ancient statues of marble and copper; also of busts and semi-busts, penates, paintings in fresco, mosaic works, and ancient pieces of miniature.

ICONOLATRÆ, or ICONOLATERS, from *εικων*, and *λατρευω*, *I worship*; or *Iconoduli*, from *εικων* and *δουλω*, *I serve*, those who worship images; a name which the iconoclasts give to those of the Romish communion on account of their adoring images, and of rendering to them the worship only due to God. See ICONOCLASTS, and IMAGE.

ICONOLOGIA, formed from *εικων* and *λογω*, *I speak*, the interpretation of ancient images, monuments, and emblems.

ICONOMACHI. See ICONOCLASTS.

ICOSAHEDRON, in *Geometry*, a regular body, or solid, terminated by twenty equilateral and equal angles.

The icofahedron may be considered as consisting of twenty triangular pyramids, whose vertices meet in the centre of a sphere, imagined to circumscribe it; and, therefore, they all have their heights and bases equal; wherefore the solidity of one of those pyramids, multiplied by 20, the number of bases, gives the solid content of the icofahedron. See REGULAR Body.

ICOSANDRIA, in *Botany*, from *εικοσι*, *twenty*, and *ανθρωπος*, *a man*, is the 12th class of the artificial system of Linnæus, distinguished by having numerous stamens, about 20, or more, inserted into the calyx, not into the receptacle. Such an insertion is justly pointed out by Linnæus as an infallible mark that the pulpy fruit of the flowers so constructed may always be eaten in safety. This rule holds good, whatever the number of the stamens may be; as in the fifth class, where, amongst many plants with poisonous or unwholesome berries, whose stamens are differently inserted, is found the *Ribes*, or Currant and Gooseberry, whose salutary fruit is indicated by the stamens growing out of the rim of the calyx, exactly as in the class *Icosandria*. At the same time, the foliage or herbage of such plants is always, more or less, to be mistrusted, being acrid, nauseous, or eminently dangerous; witness the *Prunus Lauro-cerasus*, or Cherry-laurel, whose essential oil, and even its distilled water, is one of the most potent of vegetable poisons. This dangerous quality resides in the oil of a bitter-almond flavour, observable in most of this tribe, which is rendered less injurious perhaps in the kernels of peaches and apricots, by the mild oil of their cotyledons, and always taken by us in too small a quantity to be materially hurtful. It is further remarkable, that as Icosandrous plants, when dried, are peculiarly subject to the depredations of insects, the same is the case with all the genus *Ribes*.

The orders of the *Icosandria* are distinguished by the number of their styles. The first, *Monogynia*, contains the valuable genus *Prunus*, and its near ally *Amygdalus*, composed of some of our finest fruits; with *Myrtus*, &c. The *Digynia*, *Trigynia*, and *Pentagynia* of Linnæus are so nearly a-kin, and so inconstant in the same genus, if not species, that it is found most commodious to unite them under the last denomination, as the number five most prevails. *Polygynia*, whose styles are more than five, is a numerous and very natural order, containing *Rosa*, *Rubus*, *Fragaria*, *Potentilla*, &c. to which the *Sibbaldia* naturally belongs, though, having usually but five stamens, it is placed in the class *Pentandria*.

ICOSANDRIA is also the name of an order in the classes *Polyadelphia*, *Monocœcia*, and *Dioecia*, whose character ought chiefly to depend on the insertion, rather than the precise number of its stamens. To this circumstance Linnæus did not sufficiently advert, when he referred *Citrus* to *Polyadelphia Icosandria*, instead of the orders *Dodecandria* or *Polyandria* of that class, and on the other hand, excluded *Melaleuca*, which is truly icosandrous, being of the natural family of *Myrti*. S.

ICOSIUM, ALGER, in *Ancient Geography*, a town of Africa, on the eastern part of Mauritania Cæsariensis. Ptolemy mentions it, and the Itinerary places it 47 miles E. of Tipasa. Pliny says that Vespasian gave it the title of a Latin city.

ICTERUS, ἰκτερός, in *Medicine*, also *icteritia*, words from the Greek, signifying *Jaundice*, which see. Whence also the adjective *icteric*: thus we say *icteric* symptoms, *icteric* medicines; meaning the symptoms of jaundice; medicines proper for the cure of jaundice, &c.

ICTERUS, in *Ornithology*, a species of *Oriolus*, which see. For other species see the same article. See also *TODUS paradiseus*, *STURNUS contra*, and *MUSCICAPA paradisi*.

ICTERUS Lapis, in *Natural History*, a name given by the ancients to a stone famous for the cure of the jaundice. Pliny describes four species of this stone. But these descriptions are so short, that we cannot determine from them which of the stones of those known at present were intended.

ICTIAR, in the *Eastern Military Orders*, an officer who has gone through all the degrees or poits in his respective body; and has a right to be a member of the divan.

ICUS, in *Ancient Geography, an island of the Archipelago, and one of the Cyclades, near Eubœa, over-against Magnesia.*

ICY CAPE, in *Geography*, a point of land on the N.W. coast of America, much incumbered with ice. N. lat. 70° 29'. W. long. 198° 20'.

IDA, in *Ancient Geography*, a common name of several mountains of considerable elevation, celebrated among the ancients. The name is derived from ἰδέω, *I see*, and applied to them on account of the extensive prospect they afforded. The principal are the two following, viz. *Ida*, mentioned by Homer, and said to be the mountain on which Paris decided the price of beauty between Juno, Minerva, and Venus. It was situated in Dardania, at some distance S.E. of Troy. Here were found the sources of the rivers Simois, Xanthe, &c. This mountain, however, is in reality a chain of mountains, of which the principal part lay to the E. and near the site of Troy. Thence it extended to the N.W., W., and S.W., as far as the sea, projecting on four promontories, towards Cyzicum, Antandros, the gulf of Adramyttium, and the promontory of Lectum. Homer, therefore, speaks of the Idæan mounts. This mountain in its whole extent is a great reservoir of water, and supplied the rivers Ætopus and Granicus, which discharged themselves into the Propontide; the Simois and Scamander, or Xanthus, which ran into the Hellespont; and the Samoies and Ciloe, which passed into the gulf of Adramyttium. The other *Ida* is a mountain of Crete, which still retains the name, though it is sometimes called *Puloriti*, and which has been much celebrated by the poets. It is much the highest mountain in the island, though in other respects inferior; it is for the greatest part of the year covered with snow, and so barren that it produces nothing but the tragacanth. Jupiter is said to have been secretly nursed on this mountain, and on this account called *Idæus*.

IDA, in *Geography*, a mountain of the island of Crete, which rises in the form of a pyramid S. W. of Candia, and

serves as a land-mark to navigators, who wish to anchor in the harbour of that town. This mountain is covered with snow almost all the year.

IDAAN. See **MAROOT**.

IDACIUS, in *Biography*, an ancient chronicler, was a native of Lamego, in Spain, and flourished in the fifth century. He wrote a chronicle commencing with the first year of the reign of Theodosius, and ending with the eleventh of that of Leo, A. D. 467. To him is attributed a table of *Fasti Confulares*, frequently published. The *Chronicle* and *Fasti* were published with notes by father Sirmond, at Paris, in 1619.

IDÆI DACTYLI, in *Ancient Geography*. See **DACTYLI**.

IDANHA a Velha, in *Geography*, a town of Portugal, in the province of Beira, near the Spanish Entre-madura. N. lat. 39° 50'. W. long. 6° 48'.

IDEA, ἰδέω, the image or resemblance of a thing, which, though not seen, is conceived by the mind. See **IMAGE**.

The word is Greek; Cicero renders it into Latin by *exemplar*, and *exemplum*; and Plato himself, in some places by παραδείγμα. Cicero, in his *Topics*, also expresses it by *forma* and *species*.

IDEA, in *Physiology*, denotes the immediate object of the mind about which we are employed, when we perceive or think of any thing; and this definition of Mr. Locke's is much less exceptionable than that of some other logicians, who define an idea to be a pattern or copy of a thing in the mind.

Thus, when we look at the sun, we do not see that luminary itself, but its image, or appearance conveyed to the soul by the organ of sight; and this image we call *idea*. See **IMPRESSION** and **PERCEPTION**.

The origin of ideas has been a long time disputed among philosophers. Aristotle and the Peripatetics maintained that external objects emit species, images, or forms, which resemble them all around; and that these species, striking on our senses, are by them transmitted to the understanding and impressed upon it; and that being material and sensible, they are rendered intelligible by the active intellect; and are at length received by the passive. The followers of Democritus and Epicurus held an opinion, with regard to slender films of subtile matter coming from external objects, similar to that of Aristotle with respect to his immaterial species or forms. Others are of opinion, that our souls have of themselves the power of producing ideas of things we would think upon; and that they are excited to produce them by the impressions which objects make on the body, though these impressions are not images in any respect like the objects that occasioned them. And in this, say they, it is, that man is made after the image of God, and that he partakes of his power; for as God made all things out of nothing, and can reduce them to nothing when he pleases, so man can create as many ideas as he pleases, and annihilate them when he has done.

Others maintain, that the mind has no occasion for any thing beside itself to perceive objects; and that, by considering itself, and its own perfections, it is able to discover all things that are without. Whilst Aristotle thought that every object of human understanding enters at first by the senses. Plato, on the other hand, had a very mean opinion of all the knowledge we acquire by the senses. According to him all science must be employed about these eternal and immutable ideas, which existed before the objects of sense, and are not liable to any change. In this respect these two philosophers essentially differed; the notion of eternal and immutable ideas, which Plato borrowed from the Pythagorean

gorean school, was totally rejected by Aristotle, who maintained it as a maxim, that there is nothing in the intellect, which was not at first in the senses. It seems, however, probable, that the Pythagoreans and Platonists agreed with the Peripatetics in their general theory of perception; viz. that the objects of sense are perceived only by certain images, or shadows of them, let into the mind, as into a "camera obscura." The notions of the ancients with regard to the seat of the soul were very various. But since it has been discovered by the improvements in anatomy, that the nerves are the instruments of perception, and of the sensations accompanying it, and that the nerves ultimately terminate in the brain, it has been the general opinion of philosophers that the brain is the seat of the soul, and that the soul perceives the images that are brought there, and external things only by means of them. (See SOUL.) Many philosophers, ancient and modern, have employed their invention to discover, how we are made to perceive external objects by our senses; and in their sentiments on this subject there seems to be a very general agreement. Plato conceived, that by our senses we perceived merely the shadows of things, and not things themselves; and his shadows may very well represent the species and phantasms of the Peripatetic school, and the ideas and impressions of modern philosophers. Since the time of Des Cartes, the shadows of external objects, called by the ancients species, forms, and phantasms, have been commonly denominated "ideas," and by Mr. Hume "impressions." But all philosophers, from Plato to Mr. Hume, agree in this, that we do not perceive external objects immediately, and that the immediate object of perception must be some image present to the mind.

The ideas by which we perceive external objects are said by some to be the ideas of the Deity; whilst it has been more generally thought that every man's ideas are proper to himself, and are either in his mind or in his "sensorium," where the mind is immediately present. The former is the theory of Malebranche. This theory seems to have some affinity with the Platonic notion of ideas, adopted with some modification by the philosophers of the Alexandrian school, commonly called the latter Platonists; but it is not the same. It does not appear that either Plato or the latter Platonists, or St. Augustine, or the Mystics, who seem to have inclined to the tenets of the Alexandrian school, thought that we perceive the objects of sense in the divine ideas. The theory, therefore, is properly the invention of Malebranche himself. According to his statement, the soul is united with a Being possessed of all perfection; who has in himself the ideas of all created beings. The Deity, then, being always present to our minds in a more intimate manner than any other being, may, upon occasion of the impressions made upon our bodies, discover to us, as far as he thinks proper, and according to fixed laws, his own ideas of the object; and thus we see all things in God, or in the divine ideas. Malebranche, however, distinguishes more accurately than any philosopher had done before, the objects which we perceive from the sensations in our own minds, which, by the laws of nature, always accompany the perception of the object. Although, he says, we see all sensible and material things in God, yet we have not our sensations in him when we perceive any sensible object; in our perception are included both a sensation and a pure idea. The sensation is a modification of the soul, and it is caused in us by God; but as to the idea, joined with sensation, it is in God, and it is in him that we see it. The system of Malebranche, it is plain, leaves no evidence of the existence of a material world, from what we perceive by our senses; for the divine ideas, which are the objects immediately per-

ceived, were the same before the world was created. He candidly admits this consequence of his opinion; and rests the complete evidence which we have of the existence of matter upon the authority of revelation.

Mr. Norris, an English divine, espoused the system of Malebranche, in his "Essay towards the Theory of the Ideal or Intellectual World," published in two volumes 8vo., 1701. This system was also adopted by many devout people of both sexes in France. It was opposed by S'Gravande in his "Introduction à la Philosophie," and particularly examined and refuted by Mr. Locke in a small tract which may be found in his "Posthumous Works." See also Berkeley's Dialogues, 2d edit. p. 257, &c. But the most formidable antagonist of Malebranche was his own countryman, Antony Arnauld, an acute writer in favour of the Jansemits. (See his article.) In the year 1683 he published his book of "True and False Ideas," in opposition to the system of Malebranche. Arnauld maintains, that ideas are modifications of our minds; and finding no other modification of the human mind which can be called the idea of an external object, he says it is only another word for perception. Ideas, considered as certain representative images, by which external objects are perceived existing either in the human or divine mind, are, according to Arnauld, mere chimeras, fictions of philosophers; there are no such beings in nature; and therefore, he says, it is to no purpose to inquire, whether they are in the divine or in the human mind. The only true and real ideas are our perceptions, which are acknowledged by all philosophers, and by Malebranche himself, to be acts or modifications of our own minds. Arnauld, however, did not totally deny the existence of ideas in the philosophical sense of that word, nor adopt the notion of the vulgar, who acknowledge no object of perception but the external object. He formally maintains, that the modes of expression common among philosophers, viz. "that we perceive not things immediately; that like ideas of them are the objects of our thoughts; and that it is in the idea of every thing that we perceive its properties," are not to be rejected, but are true when rightly understood. By endeavouring to reconcile these expressions to his own definition of ideas, he embarrassed himself and his subject.

The common theory of ideas is in general, as we have already stated, that we perceive external objects by certain images which are in our minds, or in the sensorium, to which the mind is immediately present. These images have been variously denominated. Since the time of Des Cartes they have been called ideas. The Cartesians divided our ideas into three classes; those of sensation, of imagination, and of pure intellect. Of the objects of sensation and imagination, they thought the images are in the brain, but of objects that are incorporeal, the images are in the understanding, or pure intellect. Mr. Locke, taking the term idea in the same sense with Des Cartes, divides ideas into those of sensation and those of reflection; meaning, by the first, the ideas of all corporeal objects, whether perceived, remembered, or imagined; by the second, the ideas of the powers and operations of our own minds. What Mr. Locke calls ideas, Mr. Hume divides into two distinct kinds, "impressions" and "ideas." The difference between these, he says, consists in the degrees of force and liveliness with which they strike upon the mind. Under impressions he comprehends all our sensations, passions, and emotions, as they make their first appearance in the soul. By ideas he means the faint images of these in thinking and reasoning. Dr. Hartley gives the same meaning to ideas as Mr. Hume does, and what Mr. Hume calls impressions he calls

sensations, conceiving our sensations to be occasioned by vibrations of the infinitesimal particles of the brain, and ideas by miniature vibrations, or vibratuncles.

Des Cartes, who contributed to overturn the Peripatetic system and the authority of Aristotle, took it for granted, as other philosophers had done before him, that he did not perceive external objects themselves, but certain images of them in his mind called ideas, and hence it is said he was led to doubt the report of his senses without collateral proof of their veracity. The impressions made upon our organs, nerves, and brain, could be nothing, according to his philosophy, but various modifications of extension, figure, and motion. There could be nothing in the brain like sound or colour, taste or smell, heat or cold: these are sensations in the mind, which, by the laws of the union of soul and body, are raised on occasion of certain traces in the brain; and although he gives the name of ideas to those traces in the brain, he does not think it necessary they should be perfectly like to the things which they represent, any more than that words or signs should resemble the things they signify. But he adds, that we may follow the received opinion as far as possible, and may allow a slight resemblance. As to the place of those ideas or images of external objects, which are the immediate objects of perception, he sometimes refers them to the brain, not only when they are perceived, but when they are remembered or imagined, and this has been held to be the Cartesian doctrine; yet he sometimes says, that we are not to conceive the images or traces in the brain to be perceived, as if there were eyes in the brain; but these traces are only occasions on which, by the laws of the union of the soul and body, ideas are excited in the mind; and therefore it is not necessary that there should be an exact resemblance between the traces and the things represented by them. Des Cartes, it is well known, made the essence of the soul to consist in thought: he would not allow it to be an unknown something that had the power of thinking; it cannot therefore be without thought: and as he conceived there can be no thought without ideas, the soul must have had ideas in its first formation, which, of consequence, are innate. See *CARTESIAN Philosophy*.

Mr. Locke produced a revolution in the modes of thinking among metaphysicians by his celebrated "Essay on the Human Understanding," a work, which brought men to think with precision on the philosophy of the human mind, and which contributed at the same time to inspire them with that candour and love of truth, which are the genuine spirit of philosophy. Locke and Des Cartes differed concerning the origin of our ideas. Des Cartes thought that some of them were innate; but he demonstrated that all our ideas are owing to our senses; and that all innate, created, and fictitious ideas, are mere chimeras.

Our mind, he shews, has not absolutely any ideas besides those presented to it by the senses, and those which it forms by its own operations on those others which the senses furnish; so that a man, destitute of one of his senses, would never have any idea belonging to that sense; and, supposing him destitute of all the senses, he would never have any idea at all; external objects having no other way of producing ideas in him, but by means of sensation, he would have no ideas, not even of reflection; because, in wanting all sensation, he wants that which would excite in him the operations of his mind, which are the objects of his reflection.

It is plain, therefore, there is no innate idea; no general truth, or first principle, inherent in the soul, and created with it; no immediate object of the mind, before it had

perceived external objects by means of the senses, and reflected on that perception. Those ideas only seem to be innate, because we find we have them as soon as we come to the use of reason; but they are, in effect, what we formed from the ideas with which the mind was insensibly filled by the senses. Thus, when the mind is employed about sensible objects, it comes by the ideas of bitter, sweet, yellow, hard, &c. which we call *sensation*; and, when employed about its own operations perceiving and reflecting on them, as employed about the ideas before got by sensation, we get the ideas of perception, thinking, doubting, willing, &c. which are called *inward sensation*, or *reflection*; and these two, *viz.* external material things, as the objects of sensation, and the operations of our own minds, as the objects of reflection, are the only originals whence all our ideas have their rise. When we have considered these, and their several modes and combinations, we shall find, that they contain our whole stock of ideas, inasmuch that the understanding does not seem to have the least glimmering of any ideas, that it did not receive from one of those sources.

And thus far the mind appears merely passive, as not having it in its power to choose whether it will have these first beginnings, or materials of knowledge, or not. For the objects of sense will obtrude their ideas upon the mind; and the operations of the mind will not let us be without some (however obscure) notion of them.

Mr. Locke ascribes likewise to the mind the power of compounding its simple ideas into complex ones of various forms; of repeating them, and adding the repetitions together; of dividing and classing them; of comparing them, and from that comparison, of forming the ideas of their relation; nay, of forming a general idea of a species or genus, by taking from the idea of an individual every thing by which it is distinguished from other individuals of the kind, till at last it becomes an abstract general idea, common to all the individuals of the kind. (See *ABSTRACTION*.) For the ideas which we have of the different qualities of bodies, according to Locke, we refer to the article *QUALITY*.

From the system of Mr. Locke and of other philosophers, who considered ideas as the immediate objects of all thought, the ingenious bishop Berkeley (see his article) inferred, and undertook to demonstrate, that there is no such thing as matter in the universe, but that all which it contains may be reduced to mind, and ideas in the mind. "It is evident," says he in the first sentence of his "Principles of Knowledge, &c." "to any one who takes a survey of the objects of human knowledge, that they are either ideas actually imprinted on the senses; or such as are perceived, by attending to the passions and operations of the mind; or lastly, ideas formed by help of memory and imagination, either compounding, dividing, or barely representing those originally perceived in the foresaid ways." See *EXISTENCE* and *MATTER*.

Berkeley's system was adopted by Mr. Arthur Collier, rector of Langford Magna, near Sarum in Wiltshire, who published a book in 1713, which he called "Clavis Universalis, or a New Enquiry after Truth; being a demonstration of the non-existence or impossibility of an external world." Bishop Berkeley has widely deviated from the common system with regard to ideas, distinguishing between ideas and notions. He specifies two kinds of ideas, those of sense and those of imagination. "The ideas imprinted on the senses by the Author of Nature," he says, "are called real things; and those excited in the imagination, being less regular, vivid, and constant, are more properly termed ideas, or images of things, which they copy and represent. But then

then our sensations, be they never so vivid and distinct, are nevertheless ideas: that is, they exist in the mind, or are perceived by it as truly as the ideas of its own framing. The ideas of sense are allowed to have more reality in them; that is, to be more strong, orderly, and coherent, than the creatures of the mind. They are also less dependent on the spirit, or thinking substance which perceives them, in that they are excited by the will of another, and more powerful spirit; yet still they are ideas; and certainly no idea, whether faint or strong, can exist, otherwise than in a mind perceiving it." Princ. § 33.

By the ideas of sense, the author means the sensations we have by means of our senses; concerning which, see SENSATION. The ideas of imagination, according to Berkeley, are more properly termed ideas, or images of things; or in other words, the images of our sensations. With regard to these it is observed by Dr. Reid, that they are not sensations; and that there is no distinction between those ideas of imagination and notions, which Berkeley says are not ideas; but they seem to Dr. Reid perfectly to coincide. See NOTION.

The opinion of Leibnitz, concerning the origin of ideas, seems to have some affinity with innate ideas. He asserts the soul to be simple, and without parts or composition; hence he concludes that no created thing can act internally upon it, but that all the changes it undergoes depend upon some internal principle.

God has formed every soul, so as to have different perceptions; some distinct, many confused; and a great number so obscure, as hardly to be perceived. All these ideas together represent the universe; understanding by this term every thing that has been, is, or shall be. According to the different relations that each particular soul has with the universe, some of its ideas are distinct, and distinctly represent a certain part of the universe. The foundation of this opinion is, that as each part of the universe, distinctly represented, has a necessary relation with every thing that exists, with every thing that has been, or shall be, all things being connected, so that the one is the consequence of another; in like manner, the representation of a certain part of the universe has a necessary and inseparable relation to the representation of the whole.

From whence it follows, that all distinct perceptions of the soul being connected with the ideas of all other things, these must likewise be in the soul, though obscurely. In this sense Mr. Leibnitz asserted, that the soul is the mirror of the universe. Now all things that happen in the universe, succeed each other according to certain laws. In like manner in the soul, ideas become successively distinct according to other laws; which, though they have a relation to the former, are yet consistent with the nature of intelligence.

All human souls have the same ideas, taking the ideas of each individual collectively. But distinct ideas are not the same in each; these depending upon the relation which each soul has to the universe; and this relation is different, according to the station which God has pleased to assign to each. This seems a fair representation of Mr. Leibnitz's system relating to the origin of ideas; upon which we may remark, that the foundation of this system is, that all the parts of the universe have a necessary connection: but to make just conclusions from this proposition, the connection must be such, that things being considered in themselves, no one thing can be supposed, without all others being so necessary a consequence thereof, that the idea of another universe, in which there should be any thing belonging to our actual universe, must be contradictory.

If such a connection took place, what is supposed concerning obscure ideas would be true in a certain sense; to wit, that it might be said, that a man who has a distinct idea of a triangle, has thereby obscure ideas of all the properties of this figure, because of the necessary connection between these last ideas and the former.

But no such connection between ideas succeeding each other in the soul is perceivable. For if passing from a dark place to one that is enlightened, I thereby suddenly acquire the ideas of several objects, never before seen, it does not appear that the previous perception of darkness must necessarily lead me to these new ideas.

According to this system, all our perceptions of external objects would be the same, though external things had never existed; our perception of them would continue, although, by the power of God, they should be this moment annihilated. We do not perceive external things because they exist, but because the soul was originally so constituted as to produce in itself all its successive changes, and all its successive perceptions, independently of the external objects.

These and other difficulties may be urged against Mr. Leibnitz's system. See LEIBNITZIAN *Philosophy*.

The ingenious Mr. Harris seems to consider all our ideas as innate; originally impressed on our minds by the Deity, and only awakened or called forth by the presence of external objects. Ideas, he says, are of the essence of mind, and, therefore, having no relation to corporeal things, cannot be produced by them. But this takes for granted a principle which is contrary to all appearance; viz. that the mind is of such a nature as that it can have no possible connection with matter, or be properly affected by it. Whatever be the nature of the thinking principle, it seems agreeable to fact and universal experience to conclude, that it is capable of being affected, either by natural operation or in consequence of an established law, by external objects; and that its perceptions correspond to the state of the corporeal system. Besides, Mr. Harris allows that sensible objects have a natural power of awakening ideas; and why may they not have a natural power of originally exciting them in the same mind? Mr. Harris farther argues, that his hypothesis is necessary to account for the identity of the ideas of different minds, which could not be explained, if they were only generated from sensible objects, which are fluctuating and variable. But it may be replied, that there is an equal identity or diversity in external objects, as there is in our ideas of them; and the correspondence between both is so strict, as to afford a sufficient proof, that our ideas have this origin, and no other. This ingenious writer supposes also, that the mental origin of our ideas is necessary to account for the correspondence subsisting between the ideas of the divine mind and those of our's, and consequently to the communication between him and us. If sensation were the only source of our ideas, this argument would have considerable force; but the contrary appears to be the fact, even upon the system of Mr. Locke, and will be more particularly illustrated in the sequel of this article. See *Hermes*, p. 380. 394, &c. 399, &c. and Priestley's *Examination of Dr. Reid's Inquiry*, &c. p. 334, &c.

According to Mr. Hume's system, all perceptions are either impressions or ideas, comprehending under the first all our sensations, passions, and emotions, and under the second, the faint images of these, when we remember or imagine them; and it is not possible for us so much as to conceive any thing specifically different from ideas and impressions; and since all ideas are copied from impressions, we can therefore have no idea or conception of any thing of which we

have

have not received an impression. No man can have any idea of power or energy, because he has never received any impression of it; and for the same reason no man can have any idea of self. What we call a body is only a bundle of sensations; and what we call a mind, is nothing but a bundle or collection of different perceptions, or of thoughts, passions, and emotions, which succeed each other with inconceivable rapidity, and are in a perpetual flux and movement, without any subject. There is properly, says Mr. Hume, no simplicity in the mind at one time, nor identity at different times, whatever natural propensity we may have to imagine that simplicity and identity. They are the successive perceptions only that constitute the mind; so that there is nothing in the universe but impressions and ideas; all possible perceptions being comprehended in those two classes. Consequently, this philosophy, excluding body and mind, admits of no existence whatsoever, not even of a percipient being to be the subject of these perceptions.

Dr. Price, in his "Inquiry into the Original of our Ideas," has taken occasion to remark, that the system of Mr. Locke, which ascribes all our ideas to sensation and reflection, is materially defective; for, if by sensation we understand the effects arising from the impressions made on our minds by external objects, and by reflection the notice which the mind takes of its own operations, it will be impossible to derive some of the most important of our ideas from them. This excellent reasoner observes, that the power within us that understands, the intuition of the mind, or the faculty in it that discerns truth, that views, compares, and judges of all ideas and things, is a spring of new simple ideas, or original, primary, and un compounded perceptions of the mind. To this source he refers our ideas of the impenetrability and *vis inertiae* of matter, substance, duration, space, infinity, necessity, contingency, possibility, impossibility, power, causation, &c. all our abstract ideas (see ABSTRACTION), and also our ideas of moral right and wrong, and of moral obligation. It is, he says, of the essence of these ideas to imply something true or false of an object, and that they by no means denote the manner in which we are affected by it: so that they cannot, with any propriety, be referred to that part of our constitution, which has been distinguished by the appellation of sense. Accordingly, our ideas may be divided, first, into those implying nothing real without the mind, or nothing real and true, besides its own affections and passions; to which class we may refer the immediate effects of impressions on the bodily senses, without supposing any previous ideas, as all tastes, smells, colours, &c. and those that arise upon occasion only of other ideas; as the effects in us of considering order, happiness, the beauties of poetry, painting, &c. Secondly, into those which are images of something distinct from sensation, or which imply real, independent existence and truth; which may be subdivided into such as denote the real properties of external objects, and the actions and passions of the mind; and those which are derived immediately from intelligence. By the notices conveyed to the mind, through the organs of the body, or its observation of the necessary attendants and concomitants of certain sensations and impressions, it perceives the figure, extension, motion, and other primary qualities of material substances; by contemplating itself, it perceives the properties of spiritual substances, volition, consciousness, memory, &c. To all these ideas it is essential that they have real, certain, invariable archetypes, actually existing, to which they are referred, and to which they are conformable. These ideas again become objects or archetypes to the intellectual faculty from whence arises a new set of ideas, which are the perceptions of this faculty, and represent not the mind's own

affections, but necessary truth. Antecedently to these, whatever other ideas we may be furnished with, nothing is understood; whatever seeds or subjects of knowledge may be in the mind, nothing is known. Price's Review, &c. of Morals, sect. 2 and 3.

The system of Mr. Locke, with regard to the origin of our ideas, has been lately attacked with considerable force of argument as well as confidence by Dr. Reid and others; and it has been charged with being the foundation of universal scepticism.

Dr. Reid suggests that Mr. Locke has been sometimes misled by the ambiguity of the word *idea*, which he often uses in different senses. In common use this word has two meanings, *viz.* a popular and a philosophical. In the popular meaning, to have an idea of any thing, signifies nothing more than to think of it. But philosophers, ancient and modern, have maintained, that the operations of the mind, like the tools of an artificer, can only be employed upon objects that are present, in the mind, or in the brain, where the mind is supposed to reside. Therefore, objects that are distant in time or place, must have a representative in the mind, or in the brain; some image or picture, which is the object contemplated by the mind. This of late has been called an *idea*, and every thought is conceived to have an idea of its object. Hence it has happened, that philosophers have been apt to confound the operation of the mind in thinking with the idea or object of thought, which is supposed to be its inseparable concomitant. Thought, and the object of thought, however, are different things, and ought to be distinguished.

Mr. Locke is charged with using the word *idea*, without any intimation of the ambiguity of the word, sometimes to signify thought, or the operation of the mind in thinking, and sometimes to signify those internal objects of thought which philosophers suppose; and this, it is apprehended, is the true source of several paradoxical opinions that occur in his excellent work. In explaining this word, Mr. Locke says that he uses it for whatever is meant by phantasm, notion, species; so that we have here three synonyms for the word *idea*. The first and last are very proper to express the philosophical meaning of the word, being terms of art in the Peripatetic philosophy, and signifying images of external things in the mind, which, according to that philosophy, are objects of thought. But the word *notion* is a word in common language, whose meaning agrees exactly with the popular, but not with the philosophical, meaning of the word *idea*. The frequent use of the word in these two senses is the cause of confusion and of misapprehension in the reader. Besides, there is a third sense in which he uses the word, and that is to denote objects of thought that are not in the mind, but external. Thus we see, that the word has three different meanings in the "Essay;" and the author seems to have used it sometimes in one, and sometimes in another, without being aware of any change in the meaning. The reader slides easily into the same fallacy.

Dr. Reid objects to every system which supposes that the mind receives images of things from without, by means of the senses, because sensations bear no resemblance to bodies or any of their qualities. With regard to extension, figure, motion, &c. he says, if they are not ideas of sensation, nor like to any sensation, then the ideal system is a rope of sand, and all the laboured arguments of the sceptical philosophy against a material world, and against the existence of every thing but impressions and ideas, proceed upon a false hypothesis. To this objection it has been replied, that ideas are only, in a figurative sense, the images of external things; that certain impressions are conveyed to

the mind by means of the organs of sense, and their corresponding nerves, between which, and the sensations existing in the mind, there is a real and necessary, though at present an unknown connection; and that the same reasoning would lead him to deny, that sounds are produced by bodies striking against one another, because he can perceive no proper resemblance between the cause and the effect.

Dr. Reid farther objects to the notion generally received among philosophers, that the images of external objects are conveyed by the organs of sense to the brain, and there perceived by the mind. But from this objection it might be inferred, that the whole system of our senses, nerves, and brain, is of no real use whatever; because it is impossible to say how they act upon the mind, or the mind upon them.

It is also objected, that Mr. Locke's division of ideas into those of sensation, and those of reflection, is contrary to all the rules of logic; because the second member of the division includes the first. For can we, says he, form clear and just notions of our sensations any other way than by reflection? Sensation is an operation of the mind of which we are conscious, and we get the notion of it by reflecting upon that which we are conscious of. In like manner, doubting and believing are operations of the mind, whereof we are conscious, and we get the notion of them by reflecting upon what we are conscious of. The ideas of sensation, therefore, are ideas of reflection, as much as the ideas of doubting or believing, or any other idea whatsoever. But it has been alleged, that the author confounds the *ideas of sensation* with the *idea of sensation itself*, which is, without doubt, of the same class with the ideas of doubting, &c. as Mr. Locke would have allowed. But the ideas belonging to the class of sensation do not require any scientific knowledge of that power, or any reflection upon it. If this were the case, brute animals, having no proper ideas of reflection, could have no ideas of sensation; and the case would be the same with the bulk of mankind. In another place, Dr. Reid acknowledges, that human beings may have ideas of mere sensation some time before they discover any power of reflection, and that this power may discover itself, and come into exercise afterwards.

Against the philosophical opinion of the "Essay" and its advocates, Dr. Reid sums up his objections in the following reflections, which we shall briefly mention, without any further detail, which our limits will not allow. 1. This opinion is directly contrary to the universal sense of men who have not been instructed in philosophy. 2. The authors who have treated of ideas have generally taken their existence for granted, as a thing that could not be called in question; and such arguments as they have mentioned incidentally, in order to prove it, seem too weak to support the conclusion. 3. Philosophers, notwithstanding their unanimity as to the existence of ideas, hardly agree in any one thing else concerning them. If ideas be not a mere fiction, they must be, of all objects of human knowledge, the things we have best access to know, and to be acquainted with; yet there is nothing about which men differ so much. 4. Ideas do not make any of the operations of the mind to be better understood, although it was probably with that view that they have been first invented, and afterwards so generally received. 5. The natural and necessary consequences of this theory furnish a just prejudice against it to every man who pays a due regard to the common sense of mankind.

Reid farther observes, that, according to Mr. Locke's system, ideas being the only objects of thought, and having no existence but when we are conscious of them, it necessarily follows, that there is no object of our thought which can have a continued and permanent existence. Body and

spirit, cause and effect, time and space, to which we were wont to ascribe an existence independent of our thought, are all turned out of existence by this short dilemma. Either these things are ideas of sensation or reflection, or they are not: if they are ideas of sensation or reflection, they can have no existence but when we are conscious of them: if they are not ideas of sensation or reflection, they are words without any meaning. To which we shall only reply, that we have the same reason to believe, that mind exists as that body exists; since it is only by that name that we distinguish the subject of certain powers or properties of which we are conscious, as perception, memory, will, &c. and we have just the same reason to believe the identity of an idea as that of any external body, or that of our own minds.

Dr. Beattie, Dr. Oswald, and others, have pursued and extended the same kind of reasoning against the principles of Mr. Locke; and alleged, that Berkeley's reasoning against the existence of a material world, and Hume's reasoning against the existence both of soul and body, are deduced from Locke's Essay, and the Principia of Des Cartes. For an account of Berkeley's system, see ABSTRACTION, BODY, and EXISTENCE.

In opposition to this system, Dr. Reid, and those who have adopted his theory, have recurred to certain instinctive principles; alleging, that our perceptions necessarily imply the belief of the present existence of external objects; and that the real, separate, and independent existence of matter is believed, not because it can be proved by argument, but because the constitution of our nature is such, that we must believe it; and that we cannot in our own minds separate the belief of external objects from our sensations. However, it has been urged by an ingenious writer, that Mr. Locke's doctrine is not so favourable to Mr. Berkeley's theory as Dr. Reid's; and that a system which ascribes our primary mental operations to mere constitution and feeling, is more favourable to scepticism than that in the room of which it is substituted.

Those who wish to be farther acquainted with the controversy relating to the nature and origin of our ideas, must be referred to Hume's Treatise of Human Nature, vol. i. p. 123, &c. 282, &c. 434, &c. Reid's Inquiry into the Human Mind, passim. Essays on the Intellectual Powers of Man, Ess. ii. Beattie's Essay on Truth, part ii. chap. 2. Priestley's Examination of Reid, Beattie, &c. passim. See COMMON SENSE.

For an account of Dr. Hartley's system of the generation of our ideas, see ASSOCIATION, VIBRATION, and VIBRATUNCLE.

The term idea has, by Mr. Locke, been extended to every thing we know or have any notion of, any thing about which the mind is employed in thinking. But this extensive use of the term idea is thought improper by a very ingenious and acute writer, who observes, that we may be said to have some knowledge or notion of our own minds, of spirits and active beings, whereof in a strict sense we have not ideas. In like manner, we know and have a notion of relations between things or ideas, which relations are distinct from the ideas or things related, inasmuch as the latter may be perceived by us, without our perceiving the former. The same author elsewhere observes, that by *mind*, *spirit*, *soul*, or *self*, he does not denote any one of his ideas, but a thing entirely distinct from them; wherein they exist, or, which is the same thing, whereby they are perceived; for the existence of an idea consists, as he says, in being perceived. He also observes, the word *thing*, or *being*, is the most general name of all, and comprehends under it two kinds entirely distinct and heterogeneous; having nothing common but the name,

to wit, *spirits and ideas*. And in another part of his treatise, he expressly affirms, there can be no idea formed of a soul or spirit. Berkeley's *Princ. of Human Knowledge*, § 2. 27. 89. 142.

Another author has also blamed Mr. Locke for confounding ideas and notions. He observes, that by idea, according to the common and most usual signification of the word, is meant the image, picture, or representation in the mind of a sensible appearance, or of an object which hath before been perceived by sense. To which sensible appearance therefore the idea necessarily refers, for whatever is in it, or upon any account can be ascribed to it; and it serves, or is made use of in its stead, for the mind to contemplate or employ itself about in thinking, at such time when the object it represents is not immediately perceived, as in the act of sense. Vide p. 105, 106 of a book, intitled "Two Dissertations concerning Sense and the Imagination, with an Essay on Consciousness." Lond. 1728. 8vo.

This author farther asserts, in opposition to Mr. Locke, that the perception of an idea is not an act of the understanding. He urges, that an idea, by Mr. Locke's own account of it, is an object, or something perceived, and about which the mind is employed in thinking. Wherefore if perception (suppose), which is an operation or act of the mind, should itself be considered as an idea (and under this very title Mr. Locke treats of perception), then one idea would be the object of another idea, and so there would be an idea of an idea, or an object of an object; and one idea would perceive another idea, which there is no making any tolerable sense of. And indeed in explaining or declaring the operation of any faculty, to give it the same name and appellation with the object itself about which it is employed, and which there is a necessity of considering, in order to set forth the particular quality and nature of the operation, and the precise manner of its concerning and having to do with the object, seems very inconsistent with such a purpose or design.

This author has been very elaborate in proving and enforcing the distinction between notions and ideas. In another treatise he observes, that Mr. Locke, in his *Essay on Human Understanding*, takes no notice of rational notions, and thereby has not only given a partial and imperfect account of his subject, but made an unjust and unfair representation of it. Vide an *Essay concerning Rational Notions*, printed at London, 1723.

That some confusion may have arisen from giving the same name to these heterogeneous things, cannot be questioned. However, Mr. Locke is, in this respect, no more guilty than Malebranche and the Cartesians, who use the term idea in the same extensive sense with him, and from whom, indeed, he seems to have taken it. But then the Cartesians seem to have been more solicitous to distinguish between the ideas of the imagination, and those of the intellect, understanding, or *de l'esprit pur*, as they sometimes express themselves, and have thereby guarded against the inconveniences arising from the too general signification of the term idea. See NOTION.

IDEAS, according to Mr. Locke, are divided into *simple* and *complex*.

IDEAS, *simple*, include all those which come into the mind by sensation; and though the qualities of bodies that affect our senses, are in the things themselves so mixed and united, that there is no separation between them, yet the ideas they produce in the mind are simple and unmixed. Again, some of these ideas we acquire purely by means of one sense; as the ideas of colours, only by the eye; of sounds by the ear; of heat by the touch, &c. Other ideas we gain by

several senses, as of space, extension, figure, rest, motion, &c. for these have their effect both on the sight and the touch. Others, again, are had from reflection only; such as those of perception and willing. There are other simple ideas, again, formed in the mind both by sensation and reflection jointly, as those of pleasure, pain, power, existence, unity, succession, &c. And some of these kinds of ideas are all, or at least the most considerable, of those simple ideas which the mind hath, and out of which is made all its other knowledge.

The better to comprehend the nature of simple ideas, it will be convenient to distinguish between them, as they are ideas of perceptions in our minds, and as they are modifications of the bodies that cause such perceptions in us, that we may not think, as is usually done, that they are exactly the images and resemblances of something inherent in the object; for most of those of sensation are in the mind no more the likeness of any thing existing without us, than the names that stand for them are the likeness of the ideas.

But here the qualities of bodies which produce those ideas in our minds, are to be distinguished into *primary* and *secondary*. *Primary* qualities are such as are utterly inseparable from the body, in what state soever it be, and such as our senses constantly find in every particle of matter; which are solidity, extension, figure, mobility, and the like. *Secondary* qualities are such, as are, in reality, nothing in the objects themselves, but only powers to produce various sensations in us, by means of their primary qualities: that is, by the figure, bulk, texture, &c. of their particles, as colours, sounds, taste, &c.

Now the ideas of primary qualities are, in some sense, resemblances of them, and their patterns do really exist in the bodies themselves; but the ideas produced in us by those secondary qualities have no resemblance of them at all. There is nothing like our ideas existing in the bodies themselves that occasion them: they are, in the bodies we denominate from them, only a power to produce those sensations in us; and what is sweet, warm, blue, &c. in the idea, is no more than the bulk, figure, and motion of the particles of the bodies themselves, which we call so. See QUALITY.

The mind has several faculties for managing these simple ideas, which are worthy of notice: as, 1. That of discerning justly, and distinguishing rightly, between one and another; in which consists the accuracy of judgment.

2. That of comparing them one with another, in respect of extent, degree, time, place, or any other circumstances of relation or dependence, one on another.

3. That of compounding, or putting together, the simple ideas received by sensation and reflection, in order to make complex ones.

4. Children, by repeated sensations, having got some ideas fixed in their memories, by degrees learn the use of signs, and when they can speak articulately, they make use of words to signify their ideas to others.

Hence, the use of words being to stand as outward marks of our internal ideas, and those ideas being taken from particular things, if every particular idea that we take in should have a particular name affixed to it, names would become endless. To prevent this inconvenience, the mind has another faculty, whereby it can make the particular ideas received from such objects become general; which is done by considering them as they are in the mind, such appearances, separate from all other existences, and circumstances of existence, as time, place, and other concomitant ideas; and this is called *abstraction*, whereby ideas, taken from particular things, become general representatives of all of that kind, and their names, general names; applicable

licable to whatever exists conformable to such abstract ideas. Thus, the same colour being observed to-day in chalk or snow, which we observed yesterday in paper or milk, we consider that appearance alone makes it a representative of all of the same kind, and gives it the name of *whiteness*; by which sound we always signify the same quality, wherefoever to be met with, or imagined.

From the powers of combining, comparing, and separating, or abstracting simple ideas, acquired by sensation and reflection, all our complex ideas are formed; and, as before, in the perception of ideas, the understanding was passive, so here it is active, exerting the power it hath in the several acts and faculties above mentioned, in order to frame compound ideas.

IDEAS, *complex*, though their number be infinite, and their variety endless, yet may all be reduced to these three heads; *viz. modes, substances, and relations*. *Modes* are such complex ideas as, however compounded, are not supposed to exist by themselves, but are considered as dependences on, or affections of, substances: such are the ideas signified by the words *triangle, gratitude, murder, &c.*

These are of two kinds: 1. Such as are only variations, or different combinations, of the same simple idea, without the mixture of any other; as a dozen, a score, &c. which may be called *simple modes*. 2. There are others, compounded of simple ideas, of several sorts put together, to make one complex one; as *beauty, theft, &c.*

Substances have their ideas from such combinations of simple ideas, as are taken to represent distinct particular things subsisting by themselves; in which the supposed or confused idea of substance, such as it is, is always the first and chief.

Relations are a kind of complex ideas, arising from the consideration or comparison of one idea with another. Of these, some only depend on the equality or excess of the same simple idea in several subjects; and these may be called *proportional relations*; such as *equal, more, bigger, sweeter*. Another occasion of comparing things together is owing to the circumstances of their origin and beginning; which not being afterwards to be altered, make the relations depending thereon as lasting as the subjects to which they belong. Thus it is with natural relations, as *father, mother, uncle, cousin, &c.* Thus also it is with relations by institution, as *prince and people, general and army, &c.* As to moral relations, they are the conformity or disagreement of men's free actions to laws and rules, whether human or divine.

Farther, *Ideas* may be divided into *clear or distinct*; and *obscure or confused*.

IDEAS, *simple*, are *clear*, when they continue such as the objects present them to us when our organs of sensation are in good tone and order; when our memories retain them, and can produce and present them to the mind whenever it has occasion to consider them; and when, with this, the mind sees that these simple ideas are severally different one from another. The contrary to which is what we call *obscurity and confusion* of ideas.

A *distinct* idea is that wherein the mind perceives a difference from all others; and a *confused* idea is such a one as is not sufficiently distinguishable from another, with regard to which it ought to be different.

IDEAS, again, with respect to the objects whence they are taken, of which they are supposed to represent, come under a threefold distinction; being either *real or fantastical; true or false; adequate or inadequate*.

IDEAS, *real*, are such as have a foundation in nature; or

such as have a conformity with the real being or existence of things, or with their archetypes.

IDEAS, *fantastical or chimerical*, are such as have no foundation in nature, nor any conformity with that being to which they are referred, or with their archetypes.

All our *simple* ideas are real; not that they are images or representations of what does exist, but as they are the certain effects of powers in things without us, ordained by our Maker to produce in us such sensations. They are real ideas in us, because by them we distinguish the qualities that are really in the bodies themselves; their reality lies in the steady correspondence they have with the distinct constitutions of real being; but whether with those constitutions as causes or patterns, it matters not, so long as they are constantly produced by them.

As to *complex* ideas; in regard they are arbitrary combinations of simple ideas put together, and united under one general name, in forming whereof the mind uses its own liberty, some are found *real*, and some *imaginary*. 1. Mixed modes and relations, having no other reality than what they have in the minds of men, are real; nothing more being required to their reality, but a possibility of existing conformable to them. These ideas, being themselves archetypes, cannot differ from their archetypes, and so they cannot be chimerical, unless any one jumbles inconsistent ideas in them; indeed, those that have names assigned to them, ought to have a conformity to the ordinary signification of those names, to prevent their appearing fantastical. 2. Our complex ideas of substances being made in reference to things existing without us, whose representations they are thought to be, are no farther real than as they are combinations of simple ideas really united and co-existing in things without us. Those are fantastical that are made up of several ideas that never were found united, as *centaur, &c.*

IDEAS, *real*, are divided into *adequate* and *inadequate*.

IDEAS, *adequate*, are those which perfectly represent those archetypes which the mind supposes them taken from, and which it makes them stand for.

IDEAS, *inadequate*, are such as do but partially, or incompletely, represent those archetypes to which they are referred.

IDEAS, *as to true and false*, it may be observed, that truth and falsehood, in propriety of speech, belong only to propositions; and when ideas are termed *true* and *false*, there is some tacit proposition, which is the foundation of that denomination. Our ideas, being nothing else but appearances or perceptions in the mind, can no more be said to be true or false, than single names of things can be said to be so; for truth and falsehood lying always in the affirmation or negation, our ideas are not capable of them, till the mind passes some judgment of them. In a metaphysical sense they may be said to be true, *i. e.* to be really as they exist; though in things called *true*, even in that sense, there seems to be a secret reference to our ideas, looked upon as the standards of that truth; which amounts to a mental proposition. When the mind refers its ideas to any thing extraneous to it, they are then capable of being true or false; because, in such a reference, the mind makes a tacit supposition of their conformity to that thing; and as this supposition is true or false, so the ideas themselves come to be denominated. Locke's Essay, 8vo. vol. i. passim.

IDEAL, in *Painting and Sculpture*, is used to signify a perfection in form, and a beauty in colouring, deduced from the general principles of nature; but not to be found in any individual person or thing of compound structure, when considered in all its parts; such as man, for instance.

No man or woman, probably, ever existed possessed of that perfect beauty of form in all their parts, of which those parts are fully capable, consistent with the power to perform their intended functions in the animal economy. Therefore artists who aim at representing the human figure in its utmost perfection, are of course called upon imperatively, to vary in some point or other from their models, and to add the beauties of others. This selection of perfect parts depending entirely upon taste, is that ideal in art, (or *beau ideal*, a term adopted from the French,) which is the source of so much beauty and character in the works of a few artists, who possessed super-eminent talents; and which, being misunderstood, or attempted without knowledge and true taste, is equally the source of so much vicious affectation and frippery in those of the greater part, whose aim is to display it.

Sir Joshua Reynolds, in his letter published in the *Idler*, No. 82, has aptly illustrated this subject by observing, that "among blades of grass, or leaves of the same tree, though no two can be found exactly alike, yet the general form is invariable. A naturalist, before he chuses one as a sample, would examine many, since, if he took the first that occurred, it might have, by accident or otherwise, such a form as scarcely would be known to belong to that species; he selects, like the artist, the most beautiful, that is, the most general form of nature."

Every species of the animal, as well as the vegetable creation, may be said to have a fixed or determinate form round which nature continually varies in every direction, as a number of radii issue from one common centre. To instance, in a particular part of the human face, the line that forms the ridge of the nose is most beautiful when it is straight; this, then, is the central form. How infinite are the variations from this line to the convex, concave, and forms made of both, we need not inform our readers. The same remarks attach to every portion of the figure. The head, the neck, the trunk, and the limbs are found almost as various in form as the features of the face; although the general character is the same in all; and fixed for every period of the life of man. In childhood, youth, manhood, and declining years, there are distinct and universal characteristics, whilst each individual in the separate classes is known by his peculiar variations of form and features. It is the duty of the artist who practises in the higher walks of art, to paint man, and not individuals; to learn the general character of the objects he is to represent, and neglect the trifling peculiarities attached to each.

But this sublime branch of study in art may be, and has been, carried to excess. It properly belongs only to one kind of subject, that is, in its more important application; *viz.* the representation of exalted and heroic characters; and of scenes, where the actors are few. Those subjects which relate to the common transactions of mankind, do not so positively require it. In them a greater degree of precise imitation is allowed, indeed required; and where many figures are introduced, the variety of characters requisite, will demand variations from the central form. But even then, unless the scene is taken from vulgar ordinary life, the different characters must not be too minutely wrought. It is true, a thin man must be represented spare of flesh; and a fat one possessing redundancy; but then all the wrinkles commonly attendant upon both are not necessary to mark their characters. Judgment and taste alone can select those which are so; and one of the most difficult lessons an artist has to learn, is, what to omit when he is copying from nature. That much may be omitted, and yet every feature necessary for true and effective representation retained, is

evident from every portrait that ever was painted; even by the meanly instructed pencil of Deener, who attempted to represent the hairs of the beard, and the grainy texture of the skin; and did it with much skill. But are his pictures more like human beings, that is, do they convey an idea of them to the mind of an observer, more strongly than the free and manly works of Vandyke and Sir J. Reynolds, who totally disregarded those minutiae!

The rejection of those trifling points is the ideal of portrait painting, and what alone raises it to an exalted rank in the scale of art. Without it, the painter of portraits is not a whit more ingenious, or more deserving of estimation, than he who imitates with ingenuity a mahogany chest, or any other painter of still life.

The same principle holds good in landscape. Trees should be represented with their own peculiar characters, but they need not have all the minute ramifications of their branches exhibited. The *beau ideal* requires in them a general characteristic form; and not too frequent a variety of species. Claude de Lorraine has sometimes carried this too far, and made all the trees in a picture of one form, or nearly so. It certainly assists in producing simplicity; but in this point nature is so exceedingly lavish of variety, that some of it is necessary to satisfy the eye of one accustomed to observe her productions.

The danger of attempting to produce the ideal in form is that of falling into affectation.

What that ideal in art which should be sought after is, may best be learned by studying the works of the ancient Greek sculptors; and observing wherein they differ from the ordinary forms of nature. The opportunities they possessed, which are utterly unknown to the inhabitants of northern Europe, of seeing the human figure constantly naked, and in violent exercise, enabled them more surely to judge of what was most beautiful in the general form; to select such as possessed those beauties; and unite their various perfections. It is said of Zeuxis the painter, that when employed in painting a Venus, he selected twelve of the most lovely women of the country, and combined in one figure, the charms for which each was most conspicuous.

The ideal in art, therefore, is not something more beautiful than nature; but nature in her perfect state; and he who attempts to produce it by drawing from his imagination rather than his judgment, will more probably fall into the region of error, than soar to the abode of truth. We shall have occasion to speak more of this when we come to treat of style in design. See *STYLE*.

IDEAL Beauty in the Fine Arts. Painters are allowed to talk of the *beau ideal*, who have nature always fitting to them in some garb or other, and they have only to copy her dress and attitudes. But with respect to music, which is entirely a work of art, and of which the beauties as well as deformities are all ideal, it has been asked by a man of more wit than feeling, what it means to say? *Sorate, que veux tu?* And this interrogator was Fontenelle! the most ingenious and agreeable writer on subjects within his competence, which the French language can boast! Ideal, in the common acceptation of the word, implies something which has no reality, and which only exists in imagination; but in speaking of the fine arts, this expression, so far from being disputed, often describes the highest point of perfection at which they can possibly arrive. It is particularly to painting and sculpture that it has been applied; though it equally belongs to poetry and music. There are arts which imitate nothing, or of which the imitations are accidental and feeble: such are architecture and instrumental music.

Let us consider the constituent parts of music—they con-

sist of three elements; melody, harmony, and time or rhythm. We should have mentioned time or measure first, because we have always found that a regular movement, of which the accents are strongly marked, has more effect on common ears than refined melody; but attention to that increases as the ear begins to discriminate, and is polished by degrees. But harmony has been invented after the lapse of many ages, and only brought to perfection by the moderns. However, after innumerable experiments, when not abused, it is found to embellish melody, and to augment its expression.

Now we should be glad to know what share the *imitation of nature* has had in the cultivation and progress of music? The warbling of birds is not measured, their concerts have no harmony, and are often very discordant; nor is their melody appreciable by our organs. The talking of *natural music* is therefore absurd; who does not see that all the beauties of music are ideal, and produced by experiment, or by that instinct which makes us augment and diminish, retouch and correct, till we are quite satisfied with our work? Let us then be more just to the polite arts, and restore to them the noble rank which is their due. They not only imitate but invent; and not content to copy nature when practicable, they can embellish her. They can express the thoughts of man: thoughts which are only the result of ambitious desires, and the ardour with which he seeks pleasure.

The ideal genus opens a wide field to imagination; for the moment our mind is elevated above sublunary, vulgar, and familiar objects, it expands in full liberty. Nor is any art better than mechanical, if it suffers us to remain wholly divested of enthusiasm, and is unable to lift us off the ground.

IDENTITATE NOMINIS, in *Law*, a writ which lies for him who, upon a capias or exigent, is arrested, and committed to prison, for another man of the same name.

IDENTITY, SAMENESS; that by which a thing is itself, and not any thing else. In which sense, *identity* differs from *similitude*, as well as *diversity*.

Our idea of identity we owe to that power which the mind has of comparing the very being of things; whereby, considering any thing as existing at any certain time and place, and comparing it with itself as existing at any other time, &c. we accordingly pronounce it the same.

When we see any thing in any certain time and place, we are sure it is that very thing, and can be no other, how like soever it may be to something else in all other respects; because we conceive it impossible, that two things of the same kind should exist together in the same place, we conclude, that whatever exists any where at the same time, excludes all of the same kind, and is there itself alone. When, therefore, we demand, whether any thing be the same or no, it refers always to something that existed at such a time, in such a place; which it was certain, at that instant, was the same with itself, and no other. Identity, therefore, evidently supposes an uninterrupted continuance of existence.

We have ideas of three sorts of substances: of God; of finite intelligences; and of bodies. God being eternal, unalterable, and every where, concerning his identity there can be no doubt. Finite spirits having had their determinate place, and time of beginning to exist, the relation to that time and place will always determine to each its identity as long as it exists. And the same will hold of every particle of matter to which no addition, or from which no subtraction, is made. These three exclude not one another out of the same place; yet each exclude

those of the same kind out of the same place. The identity and diversity of modes and relations is determined after the same manner that those of substances are; only the actions of finite beings, as motion and thought, consisting in succession, cannot exist in different times and places as permanent beings: for no motion or thought, considered as at different times, can be the same; each part thereof having a different beginning of existence. From whence it is plain, that existence itself is the *principium individuationis*, which determines a being to a particular time and place incommunicable to two beings of the same kind.

Thus, suppose an atom existing in a determined time and place, it is evident, that, considered in any instant, it is the same with itself, and will be so, as long as its existence continues. The same may be said of two, or more, or any number of particles, whilst they continue together, the mass will be the same, however jumbled; but if one atom be taken away, it is then not the same mass. But in vegetables, the identity depends not on the same mass, and is not applied to the same thing: the reason of this is, the difference between an inanimate body, and a crude mass of matter; this latter being only the cohesion of particles any how united, the other such a disposition of organization of parts, as is fit to receive and distribute nourishment, so as to continue and frame the wood, bark, leaves, &c. (of an oak, for instance) in which consists the vegetable life. That, therefore, which hath such an organization of parts, partaking of one common life, continues to be the same plant, though that life be communicated to new particles of matter vitally united to the living plant. The case is not so much different in brutes, but that any one may hence see what makes an animal, and continues it the same. The identity of the same man likewise consists in a participation of the same continued life, in succeeding particles of matter vitally united to the same organized body.

To understand identity aright, we must consider what idea the word stands for; it being one thing to be the same substance; another, the same man; and a third, the same person. An animal is a living organized body; and the same animal is the same continued life communicated to different particles of matter, as they happen successively to be united to that organized living body; and our notion of man is but of a particular sort of animal. Person stands for an intelligent being, that reasons and reflects, and can consider itself the same thing in different times and places, which it doth by that consciousness that is inseparable from thinking. By this every one is to himself, what he calls *self*, without considering whether that self be continued in the same, or in diverse substances. In this consists personal identity, or the sameness of a rational being; and so far as this consciousness extends backward to any past action, or thought so far reaches the identity of that person. It is the self same now it was then; and it is by the same self, with this present one, and that now reflects on it, that that action was done. Self is that conscious thinking thing, whatever substance it matters not, which is conscious of pleasure and pain, capable of happiness or misery; and so is concerned for itself as far as that consciousness extends. That with which the consciousness of this present thinking can join itself, makes the *same* person, and is one self with it; and so attributes to itself, and owns all the actions of that thing as its own, as far as that consciousness reaches. Personality is something that cannot be divided, or consist of parts. It is in the strictest sense what Leibnitz calls a *Monad*, which see; and personal identity implies the continued existence of that indivisible thing called self; which, whatever be its precise nature, thinks,

thinks, deliberates, resolves, acts, and suffers. It is not thought, action, feeling; but something that thinks, acts, and suffers my thoughts, actions, and feelings to change every moment; they have no continued, but a successive existence; but that *self*, or *I*, to which they belong, is permanent, and has the same relation to all the succeeding thoughts, actions, and feelings, which I call mine. Should it be asked, what evidences have you that there is such a permanent self which has a claim to all the thoughts, actions, and feelings, which you call yours? It is replied, that the proper evidence I have of all this is remembrance, or, as some express it, consciousness.

Consciousness, says the excellent bishop Butler, of what is past, ascertains our personal identity to ourselves; yet to say that it makes personal identity, or is necessary to our being the same persons, is to say, that a person has not existed a single moment, nor done one action but what he can remember: indeed, none but what he reflects upon. And one should really think it self-evident, that consciousness of personal identity presupposes, and, therefore, cannot constitute personal identity; any more than knowledge in any other case can constitute truth which it presupposes. Though present consciousness of what we at present do and feel is necessary to our being the persons we now are; yet present consciousness of past actions or feelings is not necessary to our being the same persons who performed those actions, or had those feelings. The identity of persons cannot subsist with diversity of substance: personal identity is, therefore, as Mr. Locke expresses it, the sameness of a rational being; and the question, whether the same rational being is the same substance, needs no answer; because being and substance, in this case, stand for the same idea. Consequently, though the successive consciousnesses which we have of our own existence are not the same, yet they are consciousnesses of one and the same thing or object; of the same person, self, or living agent. The person of whose existence the consciousness is felt now, and was felt an hour or a year ago, is discerned to be, not two persons, but one and the same person, and, therefore, is one and the same. Butler's Analogy, Append. Diff. 1.

The identity of a person is a perfect identity: wherever it is real, it admits of no degrees; and it is impossible that a person should be the same in part, and in part different; because, as we have already said, a person is a monad, and is not divisible into parts. But the evidence of identity in other persons besides ourselves admits of various degrees, from what we account certainty to the least degree of probability. But still it is true, that the same person is perfectly the same, and cannot be so in part, or in some degree only. We probably at first derive our notion of identity from that natural conviction which every man has from the dawn of reason of his own identity and continued existence. The operations of our minds are all successive, and have no continued existence: but the thinking being has a continued existence, and we have an invincible belief that it remains the same when all its thoughts and operations change. The evidence we have of our own identity, as far back as we remember, is totally of a different kind from the evidence we have of the identity of other persons, or of objects of sense. The first is grounded on memory, and gives undoubted certainty. The last is grounded on similarity and on other circumstances, which in many cases are not so decisive as to leave no room for doubt. See Reid's Essays, Ess. iii. chap. 4.

This personal identity is the object of reward and punishment, being that by which every one is concerned for himself. If the consciousness went along with the little finger; when

that was cut off it would be the same self, that was just before concerned for the whole body. If the same Socrates, waking and sleeping, did not partake of the same consciousness, he would not be the same person: Socrates waking could not be, in justice, accountable for what Socrates sleeping did; no more than one twin for what his brother-twin did; because their outsides were so like that they could not be distinguished.

But suppose I wholly lose the memory of some parts of my life, beyond a possibility of retrieving them, so that I shall never be conscious of them again; am I not again the same person that did those actions though I have forgotten them? I answer, we must here take notice what the word *I* is applied to, which in this case is the man only; and the same man being presumed to be the same person, *I* is easily here supposed to stand also for the same person. But if it be possible for the same man to have a distinct, incommunicable consciousness at different times, it is past doubt the same man would, at different times, make different persons; which we see is the sense of mankind in the most solemn declaration of their opinions; human laws not punishing the madman for the sober man's actions, nor the sober man for what the madman did; thereby making them two persons.

Thus we say, in English, such a one is not himself, or is beside himself; in which phrase it is insinuated, that self is changed, and the self same person is no longer in that man. But is not a man, drunk or sober, the same person? Why else is he punished for the same fact he commits when drunk, though he be never afterwards conscious of it? Just as much the same person as a man that walks and does other things in his sleep, is the same person, and is answerable for any mischief he shall do in it. Human laws punish with a justice suitable to their way of knowledge; because in these cases they cannot distinguish certainly what is real; and what is counterfeit; and so the ignorance in drunkenness, or sleep, is not admitted as a plea. For though punishment be annexed to personality, and personality to consciousness, and the drunkard is not conscious, perhaps, of what he did, yet human judicatures justly punish him, because the fact is proved against him; but want of consciousness cannot be proved for him. But in the great day, wherein the secrets of all hearts shall be laid open, it may be reasonable to think no one shall be made to answer for what he knows nothing of, but shall receive his doom; his own conscience accusing, or else excusing him.

To conclude this article, whatever substance begins to exist, it must, during its existence, be the same; whatever composition of substances begin to exist, during the union of those substances, the concrete must be the same. Whatsoever mode begins to exist, during its existence it is the same; and so if the composition be of distinct substances and different modes, the same rule holds. Whence it appears, that the difficulty or obscurity that has been about this matter, rather arises from names ill used, than from any obscurity in the things themselves. For whatever makes the specific idea, to which the name is applied, if that idea be kept steadily to, the distinction of any thing into the same and diverse, will easily be conceived. Locke's Essays, vol. i. chap. 27.

IDEOT. See IDIOT and LUNATIC.

IDES, IDUS, in the Roman Calendar, a denomination given to eight days in each month; commencing in the months of March, May, July, and October, on the fifteenth day; and in the other months on the thirteenth day; and reckoned backward, so as in the four months above

specified to terminate on the eighth day, and in the rest on the sixth.

The origin of the word is contested. Some will have it formed from *ιδω*, *to see*; because the full moon was commonly seen on the day of the ides; others from *ιδος*, *species*, *figure*, on account of the image of the full moon then visible; others from *idulium*, or *ovis idulis*, a name given by the Etrurians to a victim offered on that day to Jupiter; others from the Etrurian word *idus*, *i. e. divido*; because the ides divided the moon into two nearly equal parts.

The ides came between the calends and the nones.

The 15th day in March, May, July, and October, and the 13th of the other months, being called the ides of those months; *idus Martii*, *Maii*, &c. the 14th day of the same four months, and the 12th of the other eight, were *pridie idus*, or the eve of the ides of March, &c. the 13th day in the four months, and the 11th in the eight, was called the third of the ides of such months, *3 idus Martii*, &c. so the 12th day in the four, and the 10th in the eight months, were the fourth of the ides, *4 idus Martii*, &c. and thus of the rest, to the eighth and sixth days, which made the eighth of the ides, *8 idus Martii*, &c.

This way of accounting is still in use in the Roman chancery, and the calendar of the breviary. The ides of May were consecrated to Mercury; the ides of March were always esteemed unhappy after Cæsar's murder; the time after the ides of June was reckoned fortunate for those who entered into matrimony; the ides of August were consecrated to Diana, and were observed as a feast day by the slaves; on the ides of September, auguries were taken for appointing the magistrates, who formerly entered into their offices on the ides of May, and afterwards on those of March.

IDIJE, or SECJA, in *Geography*, a province of Japan.

IDIOM, *ἰδιωμα*, *propriety*, of *ἰδιο*, *proper*, *οἰον*, is sometimes used for the peculiarities of a language; sometimes for a dialect, or the language of some particular province; differing, in some respects, from the language of the nation, in general, whence it is derived.

IDIOMS, *Communication of*. See COMMUNICATION.

IDIOPATHIC, in *Medicine*, an epithet derived from *ἰδιο*, *proper*, or *peculiar*, and *παθος*, *affection*, and denoting such an indisposition or disease as properly and originally belongs to the part of the body in which it appears, and is not caused by any other or preceding disease, nor dependent on disease in any other part of the body. Hence *idiopathic* stands in opposition to *sympathic*, or *symptomatic*, and *idiopathy* (an obsolete term) to *sympathy*; the sympathic or symptomatic affections being such as arise in consequence of some prior disorder in some other part of the body. Thus when vomiting arises from inflammation in the stomach, it is said to be *idiopathic*; when it arises from injury done to the brain, from a stone in the kidney, or from the state of the uterus in pregnancy, it is *sympathic*, *sympathetic*, or *symp-tomatic* of the diseased state of these distant organs.

IDIOSYNCRASY, from *ἰδιο*, *peculiar*, *συν*, *with*, and *κρᾶσις*, *temperament*, signifies the peculiar disposition or constitution of individuals, in consequence of which particular agents operate upon them, in a manner different from their ordinary mode of action upon persons in general, or peculiar inclinations and aversions, whether in health or sickness, manifest themselves. Thus certain articles of diet, as shell-fish, bitter almonds, &c. taken in the smallest quantity, immediately excite, in some individuals, an eruption or rash on the skin; which is ascribed to the peculiar idiosyncrasy of such individuals. From a similar cause, the operation of medicines is variously modified; a small dose, which is altogether inert

in one habit, will operate violently in another; a drug, which does not offend the stomach, but purges the bowels, in one person, will invariably excite vomiting in another; and so on, according to the different idiosyncrasy of each.

IDIOT, IDEOT, in the *English Laws*, denotes a natural fool, or a person who hath had no understanding from his birth; and therefore in law presumed never likely to attain any.

The word is originally Greek, *ιδιωτης*, which primarily imports a *private person*, or one who leads a private life, without any share or concern in the government of affairs.

A person who has understanding enough to measure a yard of cloth, number twenty rightly, and tell the days of the week, his parents, his age, &c. is not an idiot in the eye of the law. But a man who is born deaf, dumb, and blind, is considered by the law in the same state as an idiot; being supposed incapable of any understanding, as wanting all those senses which furnish the human mind with ideas. (4 Inst. 203. Com. Journ. 1610.) For this reason the custody of an idiot and his lands was formerly vested in the lord of the fee (Flet. l. i. c. 11. § 10.); and therefore still, by special custom in some manors, the lord shall have the ordering of idiot and lunatic copy-holders (Dyer, 302. Hutt. 17. Noy. 27.); but by reason of the manifold abuses of this power by subjects, it was at last provided by common consent, that it should be given to the king as the general conservator of his people; in order to prevent the idiot from wasting his estate, and reducing himself and his heirs to poverty and distress. (F. N. B. 232.) This fixed prerogative of the king is declared in parliament by statute 17 Edw. II. c. 9. which directs (in affirmance of the common law, 4 Rep. 126.) that the king shall have ward of the lands of natural fools, taking the profits without waste or destruction, and shall find them necessaries; and after the death of such idiots he shall render the estate to the heirs; in order to prevent such idiots from aliening their lands, and their heirs from being disinherited. Idiots, and persons of non-sane memory, are not totally disabled either to convey or purchase, but *sub modo* only. For their conveyances and purchases are voidable, but not actually void. The king, indeed, on behalf of an idiot, may avoid his grants or other acts. See NON-COMPOS.

For the custody of idiots, see CUSTODY.

In criminal cases idiots and lunatics are not chargeable for their own acts, if committed under these incapacities; not even for treason itself. 3 Inst. 6. See LUNATIC.

If a man be found by a jury an idiot, *a nativitate*, he may come in person into the chancery before the chancellor, or be brought there by his friends, to be inspected and examined, whether idiot or not; and if, upon such view and inquiry, it appears he is not so, the verdict of the jury, and all the proceedings thereon, are utterly void, and instantly of no effect. 9 Rep. 31.

Idiotism constitutes an incapacity for entering into the matrimonial contract, in which case it is not valid. (1 Roll. Abr. 357.) It was formerly adjudged that the issue of an idiot was legitimate, and consequently that his marriage was valid. This must have been a strange determination; since consent is absolutely requisite to matrimony, and neither idiots nor lunatics are capable of consenting to any thing. And therefore the civil law judged much more sensibly when it made such deprivations of reason a previous impediment; though not a cause of divorce, if they happened after marriage. ff. 23. tit. i. l. 8. and tit. ii. l. 16. See MARRIAGE.

IDIOT, *Idiota*, is also used by ancient writers for a person ignorant, or unlearned; answering to *illiteratus*, or *impreritus*.

ritus. In this sense, Victor tells us, in his *Chronicon*, that, in the consulship of Messala, the holy Gospels, by command of the emperor Anastasius, were corrected and amended, as having been written by idiot evangelists: "Tanquam ab idiotis evangelistis composita."

Idiot, or ἰδιώτης, is properly a person in a private station; and so the word should have been rendered, Acts, iv. 13. and not "ignorant," an epithet by no means applicable to the apostles Peter and John. The term ἰδιώτης is also used, not only in opposition to a public magistrate, but likewise as the opposite of a public speaker: and St. Paul has used it, 1 Cor. xiv. 16. in the sense of "hearer." From this epithet, ἰδιώτης λόγος, which he himself has assumed, 2 Cor. xi. 6. some persons have unwarrantably inferred that his language has a tincture of vulgarity. Whereas ἰδιώτης λόγος expresses nothing more than a man who is no orator, who pays no attention to the elegance of language, but speaks in the dialect of common conversation. In opposition to ἰδιώτης λόγος, St. Paul adds, ἀλλ' ἐστὶν ἡ γνῶσις, in which he was not ἰδιώτης, but a teacher and apostle. The word may possibly be applied to the deviation from classic purity observable in the style of St. Paul, which an author who attempted only to please, might have cultivated with more attention; but setting all idioms aside, the whole expression is applicable to every man who delivers plain truths in artless language. A professor in an university, who is attentive to the accuracy of criticism, but regardless of the graces of composition, is in the strictest sense ἰδιώτης λόγος ἀλλ' ἐστὶν ἡ γνῶσις.

IDIOTA *inquirendo vel examinando, De*, a writ issued out to the sheriff of a county, where the king has notice that there is an idiot naturally born, so weak of understanding, that he cannot govern or manage his inheritance; directing him to call before him the party suspected, and examine him, and enquire, by a jury of twelve men, whether he be an idiot or not (F. N. B. 232.); and if they find him *purus idiota*, the profits of his lands, and the custody of his person, may be granted by the king to some subject, who has interest enough to obtain them. See **IDIOR**.

This hath been long considered as a great hardship upon private families; but few instances occur of the oppressive exertion of it.

IDIOTISM, derived from ἰδιος, *proper, peculiar*, in *Grammar*, a phrase, or manner of speaking, peculiar to a language, and which cannot be rendered word for word into any other.

Idiotism is defined, by some authors, an inflection of some verb, or a particular construction of some phrase or particle, that is anomalous, and deviates from the ordinary rule of the language of the nation, but which is in use in some particular province of it. Or, it denotes the employing of *e. g.* an English word in a sense which it bears in some provincial dialect, in low and partial use, and which perhaps the corresponding word bears in some foreign tongue, but unsupported by general use in our own language.

Several authors have written of the idiotisms in the Greek and Latin languages; that is, of the particular turns in those tongues which vary the most from each other, and from the more popular among the modern tongues; but the examples of these idiotisms being borrowed from the best authors, idiotism, in this sense, cannot properly be called an irregularity.

Idiotisms, taken in the sense of vulgarisms, have been unjustly ascribed to the language of the New Testament. Whilst we cannot contend with Palaiet, Blackwall, and others, for the classical purity of the language of the New Testament, we can by no means assent to the declaration of Heumann, who, in his notes on the New Testament, asserts

that it is written in the very worst Greek; and in the language of the vulgar; that many words and phrases have been used in a sense unknown to the classics, and given them only by the populace; and that their meaning is not to be discovered by the help of the Greek writers, but merely from conjecture on the general connexion. As the charge of vulgarity has never been proved, and the idiotisms, which are not so numerous as he has pretended, may be explained by other means than mere conjecture, the whole edifice which he has erected on this basis falls of itself to the ground. Count Zinzendorf is no less mistaken, who has pretended to discover in the sermons of Christ certain idiotisms, in use only among the common workmen of Nazareth, that is, vulgar Syriac expressions, translated literally into Greek; and this he has attempted to shew in passages, where several commentators have discovered mysteries. To this charge it has been replied that rabbinisms, not vulgarisms, must be sought for in the sermons of Christ; for the Jews themselves, astonished at a language which they did not expect from an education in Nazareth, applied to it an epithet, *λόγος χερσίν*, Luke, iv. 22., which belongs only to the graces of a polished style. See Michaelis's *Introd. to the New Testament*, by Herb. Marsh, vol. i. p. 172.

IDITA, a name, among Hindoo mythologists, of Parvati, the consort of Siva. In this, as well as in numerous other instances, Parvati corresponds in character with the Grecian Diana, who, under the name of Lucina, was invoked by the heathens of Europe, as presiding over child-birth; and was in this character also called Ilythia. So with the Hindoos, Parvati, the Sakti or energy of Siva, the power of reproduction, is invoked, with an appropriate burnt offering of certain perfumes, by women in labour, under the title of Idita, or Ilita; words in Sanscrit implying *praise*; and applied to the goddess, because she is *praised* by women requiring, or having received, her assistance. See **PARVATI**.

IDLE RIVER, in *Geography*, in Nottinghamshire and Yorkshire, is navigable from its fall into Trent at Stockwith, to the town of Bawtry; as mentioned, with other particulars, in our article **CANAL**. About 21,000 acres of the county of Derby drains to this river; the strata intersected by its channels, and other particulars respecting the upper parts of this river, will be found in Mr. Farey's *Agricultural and Mineral Report on Derbyshire*, vol. i.

IDLENESS, in *Law*. See **VAGABOND**.

IDOL, from εἰδωλον, which signifies the same, of εἶδος, *image, figure*, a statue or image of some false god, to whom divine honours are paid, altars and temples erected, and sacrifices offered.

The idol or image, whatever materials it consisted of, was by certain ceremonies called consecration, converted into a god. While under the artificer's hands, it was only a mere statue.

Three things were necessary in order to change it into a god; proper ornaments, consecration, and oration. The ornaments were various, and wholly designed to blind the eyes of the ignorant and stupid multitude, who are chiefly taken with show and pageantry. Then followed the consecration and oration, which were performed with great solemnity among the Romans.

IDOLA, in *Geography*, a small island in the Adriatic. N. lat. 44° 25'. E. long. 15° 10'.

IDOLATRY, from εἰδωλατρειαν, which signifies the same; composed of εἶδος, *image*, and λατρεῖν, *to serve*, the worship and adoration of false gods; or the giving those honours to creatures, or the works of man's hands, which are only due to God.

Several

IDOLATRY.

Several have written of the origin and causes of idolatry : among the rest, Vossius, Selden, Godwyn, and Tennison ; but it is still a doubt who was the first author of it. It is generally allowed, however, that it had not its beginning till after the deluge ; and many are of opinion, that Belus, who is supposed to be the same with Nimrod, was the first man that was deified.

But whether they had not paid divine honours to the heavenly bodies before that time, cannot be determined ; our acquaintance with those remote times being extremely slender.

All that can be said with certainty is, that 426 years after the deluge, when God led Terah and his family out of Chaldea, and Abraham passed over Mesopotamia, Canaan, the kingdom of the Philistines, and Egypt, it does not appear that idolatry had then got any footing in any of those countries ; though some idly pretend, that Abraham himself was an idolater.

The first mention we find made of it is in Gen. xxxi. 19. where Rachel is said to have taken the idols of her father : for though the meaning of the Hebrew word *theraphim*, תְּרָפִים, be disputed, yet it is pretty evident they were idols. Laban calls them his gods, and Jacob calls them strange gods, and looks on them as abominations. See THERAPHIM.

The original idolatry by image worship is by many attributed to the age of Eber, 2247 B. C. about 101 years after the deluge, according to the Hebrew chronology ; 401 years according to the Samaritan ; and 531 years according to the Septuagint ; though most of the fathers place it no higher than that of Serug ; which seems to be the more probable opinion, considering that for the first 134 years of Eber's life all mankind dwelt in a body together ; during which time it is not reasonable to suppose that idolatry broke in upon them ; then some time must be allowed after the dispersion of the several nations, which were but small at the beginning, to increase and settle themselves ; so that if idolatry was introduced in Eber's time, it must have been towards the end of his life, and could not well have prevailed so universally, and with that obstinacy, which some authors have imagined. Terah, the father of Abraham, who lived at Ur, in Chaldea, about 2000 years B. C., was unquestionably an idolater ; for he is expressly said in scripture to have served other gods. The eastern authors unanimously agree, that he was a statuary or carver of idols ; and he is represented as the first who made images of clay, pictures having only been in use before ; and who taught that they were to be adored as gods. It is said, that he was converted by Abraham. The authors of the Universal History think, that the origin and progress of idolatry is plainly pointed out to us in the account which Moses gives of Laban's and Jacob's parting, Gen. xxxi. 44, &c. From the custom once introduced of erecting monuments in memory of any solemn covenants, the transition was easy into the notion, that some deity took its residence in them, in order to punish the first aggressors ; and this might be soon improved by an ignorant and degenerate world, till not only birds, beasts, stocks, and stones, but sun, moon, and stars, were called into the same office ; though used, perhaps, at first, by the designing part of mankind, as scare-crows, to over-awe the ignorant. Univ. Hist. vol. i. part ii. p. 853. edit. fol.

Cluverius, German. Antiq. lib. i. maintains Cain to have been the first idolater ; and the false gods that he worshipped to have been the stars, to whom he supposed God had left the government of the lower world ; but this is mere conjecture.

Sanchoniathon, who wrote his Phœnician Antiquities,

apparently with a view to apologize for idolatry, traces its origin to the descendants of Cain, the elder branch, who began with the worship of the sun, and afterwards added a variety of other methods of idolatrous worship : proceeding to deify the several parts of nature, and men after their death, and even to consecrate the plants shooting out of the earth, which the first men judged to be gods, and worshipped as those that sustained the lives of themselves and of their posterity. Cumberl. on Sanchon. p. 219, &c.

The Chaldean priests, in process of time, being by their situation early addicted to celestial observations, instead of conceiving as they ought to have done concerning the omnipotence of the Creator, and mover of the heavenly bodies, fell into the impious error of esteeming them as gods, and the immediate governors of the world, in subordination, however, to the Deity, who was invisible except by his works, and the effects of his power. Concluding that God had created the stars and great luminaries, for the government of the world, partakers with himself and as his ministers, they thought it but just and natural that they should be honoured and extolled, and that it was the will of God they should be magnified and worshipped. Accordingly they erected temples, or *facella*, to the stars, in which they sacrificed and bowed down before them, esteeming them as a kind of mediators between God and man. Impostors afterwards arose, who gave out, that they had received express orders from God himself concerning the manner in which particular heavenly bodies should be represented, and the nature and ceremonies of the worship which was to be paid them. When they proceeded to worship wood, stone, or metal, formed and fashioned by their own hands, they were led to apprehend, that these images had been, in some way or other, animated or informed with a supernatural power by supernatural means ; though Dr. Prideaux imagines, that, being at a loss to know how to address themselves to the planets when they were below the horizon, and invisible, they recurred to the use of images. Dr. Prideaux's Connection, &c. book iii. p. 177. 8vo.

But it will be sufficient to suppose, that they were persuaded that each star or planet was actuated by an intelligence ; and that the virtues of the heavenly body were infused into the image that represented it. It is certain, that the sentient nature and divinity of the sun, moon, and stars, was strenuously asserted by the philosophers, particularly by Pythagoras and his followers, (Diogen. Laert. lib. viii. p. 509.) and by the Stoics (Cicero, De Nat. Deor. lib. ii. cap. 15.) as well as believed by the common people, and was indeed the very foundation of the Pagan idolatry. The heavenly bodies were the first deities of all the idolatrous nations, were esteemed eternal, sovereign, and supreme, and distinguished by the title of the natural gods. Thus we find that the primary gods of the heathens in general were Saturn, Jupiter, Mars, Apollo, Mercury, Venus, and Diana ; by which we can understand no other than the sun and moon, and the five greatest luminaries next to these. Plutarch expressly censures the Epicureans for asserting that the sun and moon are void of intelligence, whom all men worshipped. Adv. Colotem. p. 1123.

Sanchoniathon (apud Euseb. Præp. Evan. lib. i. cap. 9.) represents the most ancient nations, particularly the Phœnicians and Egyptians, as acknowledging only the natural gods, the sun, moon, planets, and elements ; and Plato declares it as his opinion, that the first Grecians likewise held these only to be gods, as many of the barbarians in his time did. In Cratyl. p. 273: F. See also Herodot. lib. i. cap. 131. 238. lib. iii. cap. 16. Diod Sic. lib. i. p. 10, 11. ed. Rhodom. Strab. Geogr. lib. xv. p. 732. Polyb. Hist. lib. vii. p. 699.

IDOLATRY.

p. 699, 700. ed. Gronov. Euseb. Præp. Ev. lib. ii. cap. 2. p. 59. Even Philo (Lib. De Somniis) and Origen (in his books Περὶ Ἀγγέλων) maintain, that the stars are so many souls incorruptible and immortal. See Farmer on Miracles, chap. iii. § 2.

Besides these natural gods, the heathens believed, that there were certain spirits who held a middle rank between the gods and men on earth, and carried on all intercourse between them; conveying the addresses of men to the gods, and the divine benefits to men. These spirits were called *dæmons*. From this imaginary office ascribed to them, they became the grand objects of the religious hopes and fears of the Pagans, of immediate dependence and divine worship. In the most learned nations, they did not so properly share, as engross the public devotion. To these alone sacrifices were offered, while the celestial gods were worshipped only with a pure mind, or with hymns and praises. As to the nature of these *dæmons*, it has been generally believed, that they were spirits of a higher origin than the human race; and in support of this opinion, it has been alleged, that the supreme deity of the Pagans is called the greatest *dæmon*; that *dæmons* are described as beings placed between the gods and men; and that *dæmons* are expressly distinguished from heroes, who were the departed souls of men. A late ingenious writer has, with great acuteness and erudition, combated this opinion, and maintained, on the contrary, that by *dæmons*, such as were the more immediate objects of the established worship amongst the ancient nations, particularly the Egyptians, Greeks, and Romans, we are to understand beings of an earthly origin, or such departed human souls as were believed to become *dæmons*. This, he says, is a fact attested by all antiquity, whether Pagan, Jewish, or Christian. He appeals to the testimonies of the heathen historians, poets, and philosophers, and to the nature of the worship paid to the heathen deities. He examines the authority of the Old Testament writers; of the authors of the Septuagint version; of Philo and Josephus; of the New Testament; and of the Christian fathers. For a farther view of the matterly manner in which this argument is treated, see Farmer on Miracles, chap. iii. § 2. *passim*. Farmer on *Dæmoniacs*, § 2. See *DÆMON* and *MIRACLES*.

Voltaire, in the art. *Idols*, *Encyclopédie*, labours to vindicate the heathens in general from the charge of idolatry. He says, that there has not existed any people on earth who assumed the name of idolaters; and that no such term is found in Homer, or Hesiod, or Herodotus, or any author of the Pagan religion; and that no law was ever enacted, requiring the ultimate worship of idols. The Greeks and Romans, he says, were gentiles and polytheists, but not idolaters; they worshipped the gods by means of these images, and not the images themselves; and were no more chargeable with idolatrous worship than the votaries of the Romish church. He also extends his laboured and spirited vindication to the Persians, Sabians, Egyptians, Tartars, and Turks; and observes, that it is an abuse of terms to call those people idolaters who worship the sun and stars, &c.

Although the Hindoo inhabitants of the East Indies deny the charge of idolatry, using the same description of arguments that are so inconclusively urged by European practitioners, of that dangerous species of adoration, in defence of image worship, it is still evident that the mass of the Hindoos are addicted to gross idolatry. Scarcely were the gods of Rome more numerous, certainly less whimsical and monstrous, than their brethren, or perhaps parents, at Bœnæ. It is, however, reasonable to conclude, that among the thinking portion of both cities were many individuals who, contemplating, although unaided by revelation imper-

fectly, the attributes of the archetype, contemned the artifices by which priestcraft had contrived to direct the worship of their deluded flock, to types and symbols; thus rendering mysterious what is in itself plain, that the initiated alone might possess the key of the mystery they had invented and taught; be the interested medium through which the deity must be propitiated, and themselves dimly seen with awe amid the obscurity of their own creating.

In Moor's Hindoo Pantheon are given exact portraits of many scores of deities worshipped, with appropriate ceremonies, and under various forms and names, by different sects of that grossly superstitious race. Some of these portraits are of images colossal, to a degree perhaps unequalled by any existing statues. (See the article *JAINA*.) Of others, exceedingly diminutive, some are of metallic casts, and apparently extremely ancient, which exhibit every gradation of art from the rudest imaginable specimen, up to a very respectable portion of skill; and even to elegance of form, and to ease and expression of attitude.

Some writers on the religious or superstitious practices of the East Indians, have related, that certain of their deities must, or must not, be of this or that metal or wood: but admitting that the Hindoos recognize practically the notion that *ex quovis ligno*, &c. Major Moor, in his Hindoo Pantheon, proves that the particulars related on that point are erroneous; as he has seen, and indeed gives frequent examples of images made of the very material that, in respect of such individual deity, was said to be unlawful. Another point, too, connected with this subject, he has corrected: for, prior to the publication of the Hindoo Pantheon, and indeed since, it has been asserted that the Hindoos admit no image of Brahma, the personification of the deity's creative power. (See *BRACHMANS* and *SIVA*.) This is not true of Brahma; of him several representations from images are given in that work: but of Brahm, the deity, the one omnipotent, of whose attributes or powers Brahma, Vishnu, and Siva are personifications, no images or representations are extant among the Hindoos. In their scripture, the Veda, (see *VEDA*,) it is declared, that "of Him whose glory is so great, there is no image." The word "image" is not, perhaps, in this instance, to be taken in its most confined sense.

This awful reverence of the deity prevails, it may be said, throughout and beyond India, in prevention of any "graven image or likeness" of him being attempted, and we cannot but think the interdiction grounded on that feeling highly salutary. Among the Mahometans, indeed, the reverential feeling is carried farther, and to an extent not perhaps necessary; for as well as all representation of the person of God, the prohibition extends also to that of the prophet, and no picture or statue of Mahomet is in existence.

It is, to return to Hindoo idols, a circumstance very creditable to the exterior morality of that extraordinary people, that no indecent exhibitions are even witnessed in their mythological delineations or sculptures. Major Moor says, (*Hin. Pan.* page 383.) that among the hundreds, perhaps thousands, of mythological subjects that came under his notice within the last few years of his residence in India, not one was, in any respect, offensive to decency. Such images, he believes, are never seen in India; at any rate they are certainly very rare, or among so many subjects some instance of their existence must have occurred. The Linga and Yoni even, however gross abstractedly, are not indecently represented; their allusions are not obtrusive, but are veiled in mysterious decency, and must, thus happily hidden from the vulgar eye, be extorted by philosophical curiosity. See *LINGA* and *YONI*.

The principal causes that have been assigned for idolatry are,

are, the indelible idea which every man has of God, and the evidence which he gives of it to himself; an inviolable attachment to the senses, and a habit of judging and deciding by them, and them only; the pride and vanity of the human mind, which is not satisfied with simple truth, but mingles and adulterates it with fables; the ignorance of antiquity, or of the first times, and the first men whereof we have but very dark and confused knowledge by tradition, they having left no written monuments or books; the ignorance and change of languages; the style of the oriental writings, which is figurative and poetical, and personifies every thing; the superstition, scruples, and fears, inspired by religion; the flattery of writers; the false relations of travellers; the fictions of poets; the imaginations of painters and sculptors; a smattering of physics, that is, a slight acquaintance with natural bodies and appearances, and their causes; the establishment of colonies, and the invention of arts, mistaken by barbarous people; the artifices of priests; the pride of certain men, who have affected to pass for gods; the love and gratitude borne by the people to certain of their great men and benefactors; and finally, the Scripture themselves ill understood. One great spring and fountain of all idolatry, in the four quarters of the globe, says sir William Jones (*As. Ref.* vol. i. p. 426.), was the veneration paid by men to the sun, or vast body of fire, which "looks from his sole dominion like the god of this world;" and another, the immoderate respect shewn to the memory of powerful or virtuous ancestors and warriors, of whom the sun and the moon were wildly supposed to be the parents. See IMAGE.

· IDOLKA, in *Geography*, a town of Lithuania, in the palatinate of Troki; 26 miles S.W. of Troki.

· IDOLOPŒIA, *Ειδολοποιία*, in *Rhetoric*, a species of prologopœia, where dead persons are supposed to speak.

· IDOLOTHYTA, *Ειδολοθητα*, things offered in sacrifice to idols; concerning the use of which, the apostle Paul lays down rules in 1 Corinth. chap. viii. ver. 4. 7. and 10.

· IDOLS, *Islands of*, in *Geography*, a cluster of small islands in the Atlantic, near the coast of Africa. N. lat. 8° 50'.

· IDOMENÆ, in *Ancient Geography*, a town of Macedonia, placed by Ptolemy in Emathia, and represented by Hierocles as an episcopal city.

· IDOMENT, in *Geography*, a town of European Turkey, in the province of Macedonia; 26 miles N.N.E. of Edeffa.

· IDRA, a small island in the Adriatic. N. lat. 44° 6'. E. long. 15° 28'.

· IDRAULICO, *Ital.* a word expressing every kind of sonorous instrument, the tones of which are produced by the compression of the air by water. See HYDRAULICON.

· IDRE, in *Geography*, a town of Sweden, in Dalecarlia; 120 miles N.W. of Fahlun.

· IDRIA. See HYDRIA.

· IDRIA, *Ban of*, a district of Carniola, immediately subject to the chamber of Inner Austria, at Gratz. The quicksilver mines of Idria are celebrated in natural history, poetry, and romance. They were discovered in the year 1499; and the hill of Vogelberg has annually yielded more than 300,000 pounds weight of mercury. The common ore is cinnabar; but sometimes the pure quicksilver runs through the crevices. Idria is surrounded with woody hills; and the Vogelberg on the E. produces oaks and broom, while the interior consists of red clay, calcareous rock, and a black soft slate, which covers the metallic veins in a southern direction. The deep descent is by ladders and stairs of stone; and the length of the galleries is computed at 316 paces, or 1580 feet. The operations in these vast mercurial caverns being pernicious to health, are sometimes allotted as a punishment to criminals.

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· IDRIAS, in *Ancient Geography*, a canton of Phrygia, in the confines of Caria.—Allo, a town of Caria.

· IDRO, in *Geography*, a town of Italy, in the department of Mea, on a lake; 16 miles N.N.E. of Brescia.

· IDSTEIN, a town of Germany, in the principality of Nassau-Weilburg; 12 miles N. of Mentz. N. lat. 50° 12'. E. long. 8° 12'.

· IDSU, a province of Japan, on the S. coast of the island of Nippon.

· IDSUME, a town of Japan, in the island of Nippon; 140 miles W.N.W. of Meaco. N. lat. 34° 95'. E. long. 131° 50'.

· IDULIA, in *Antiquity*, certain eggs offered to Jupiter on the ides of every month. They were so called from their being offered on the ides.

· IDUMÆA, in *Ancient Geography*, or *Land of Edom*, a country of Asia, on the confines of Palestine and Arabia, or rather comprehending parts of Palestine and Arabia; having Judea on the N., Egypt and a branch of the Red sea on the W., the rest of Arabia Petræa on the S., and the desert of Arabia on the E. Its extent varied in different periods of time. Esau, or Edom, from whom it derived its name, and his descendants, settled along the mountains of Seir on the E. and S. of the Dead sea, from whence they spread themselves by degrees through the W. part of Arabia Petræa, from that sea quite to the Mediterranean. (See EDM.) In the time of Moses, Joshua, and even of the Jewish kings, they were hemmed in by the Dead sea on one side, and the Eleanitic gulf on the other; but during the Jewish captivity at Babylon, they advanced further N. into Judea, and spread themselves as far as Hebron in the tribe of Judah, taking possession of what had formerly been the whole inheritance of the tribe of Simeon; and half of that which had been the inheritance of the tribe of Judah; till at length going over to the religion of the Jews they became incorporated with them into the same nation. Josephus gives this account of their conversion. Hyrcanus took also Adora and Marissa, cities of Idumæa; and having subdued all the Idumæans, he permitted them to remain in the country, upon condition that they would be circumcised and use the Jewish laws, and submit to live in every respect as Jews. From that time, in the 129th year B.C., they became Jews. Strabo, and after him many later geographers, had divided it into Eastern and Southern Idumæa, with regard to its situation from Palestine. The capital of the former was called "Bozrah," or "Bosra," and that of the latter "Petra," or "Jactael." Josephus, with regard to its extent at different periods, distinguishes it, when at the longest, by the epithet of "Great," in opposition to its more narrow boundaries, and places Hebron among the Idumæan cities. He seems also to distinguish between Lower and Upper Idumæa; but, upon the whole, the country is represented as hot, dry, mountainous, and in some parts barren; the mountains exhibiting dreadful rocks and caverns like the southern part of Judah, which is called a desert, full of such rocky recesses and caverns, which became the lurking-places of thieves and banditti. Concerning its ancient history, see the article EDM.

Of this country little has been said by modern geographers and travellers, except that it lies mostly waste and uncultivated. It is inhabited by wild Arabs, with whom Europeans have little or no intercourse. The country is now in possession of the Turks; though it doth not appear that they keep any garrisons in it, except on the sea-coast, for securing the road between Egypt and Palestine. Among the castles mentioned by travellers is Larissa, to which we may add Şalka, near the frontiers of Egypt, the residence of the

pacha of this province. The Turks keep foldiers also at Tina, a town on the sea-shore; Catio, a garrisoned castle, where a toll is exacted from all merchants and passengers, situated in a desert; Tor, a small sea-port and castle near the straits of Suez, where awaga commands the garrison.

IDYLLION, in *Poetry*, a little poem, containing the description or narration of some adventures.

The word is derived from the Greek *ιδυλλιον*, diminutive of *ιδος*, *figure, representation*; because this poetry consists in a lively natural image or representation of things.

The learned bishop Lowth, in his "Prælectiones, &c." defines an idyllion to be a poem of moderate length, of an uniform, middle style, chiefly distinguished for elegance and sweetness; regular and clear as to plot, conduct, and arrangement.

Theocritus is the oldest author who has written idyllions. The Italians imitate him, and have brought the idyllion into modern use.

The idyllions of Theocritus have a peculiar delicacy; they appear with a clownish, rustic kind of simplicity, but are full of the most exquisite beauties; they seem drawn from the breast of nature herself, and to have been dictated by the graces.

The idyllion is a kind of poetry which paints the objects it describes; whereas the epic poem relates them, and the dramatic acts them. The modern writers of idyllions do not keep up to that original simplicity observed by Theocritus; the people of our days would not bear an amorous fiction, resembling the awkward gallantries of our peasants. Boileau observes, that the shortest idyllions are usually the best.

The modern idyllions differ from those of the ancients, by introducing none but allegorical shepherds or courtiers disguised in their dress; whereas those of the ancients represent true shepherds. Mr. Hardion observes, that the taste of the present age is so very different from that of the ancients in this respect, that he would not take upon him to give a literal translation of Theocritus's idyllions; not that he reckons them bad in themselves, nor that he condemns the rules followed in their composition; but because the rules that were good at the time those poems were written, would, in the present age, be relished but by very few.

The subject of idyllions, as being low of itself, requires the greatest elegance of diction to set it off. Mr. Hardion is of opinion, that Theocritus has the advantage of Virgil in this respect; observing always the structure peculiar to pastoral poems, which constitutes one of its chief beauties. This structure requires that the fourth foot of every verse should be a dactylus, and sometimes also the first, when it can be done without affectation. Besides, it is also necessary that these dactyli should be made without any cæsura following; and, if possible, there should be a rest in the sense after each dactyle, which would add greatly to the regularity and perfection of each verse. Such are the following verses of Theocritus and Virgil:

"Εἶπε μοι, ὦ Κορυδαῖν, τίνας αἰ βόες; ἤγε Φιλωνδα."
Theoc. Idyl. iv. ver. 1.

"Dic mihi, Damæta, cujum pecus? An Melibæi?"
Virg. Ecl. iii. ver. 1.

This structure in pastoral poems gives a vivacity, which is wonderfully pleasing in the mouth of a shepherd. These rules are observed by Theocritus with all the exactness possible; but by Virgil seldom; which is rather to be imputed to the genius of the Latin tongue than his want of ability;

it being less copious, bold, and pliant, than the Greek. Mem. Acad. Inscript. tom. vi. p. 255, 256.

The invention of the idyllion is ascribed to Daphnis, who, by his extraordinary genius, says Diodorus Siculus, "invented the bucolic poem and song, in the form it continues to appear in at present in Sicily." This passage is considerable, as it fully ascertains the origin of the idyllion, such as it appears in Theocritus, and those that have imitated him.

After Daphnis, another Sicilian shepherd, called Diomus, made himself famous for his pastoral poems. Next came Stefichorus, who, according to Ælian, was the first that made the misfortunes of Daphnis the subject of his songs. He lived, as some chronologers will have it, in the time of Phalaris, about 550 years before the vulgar era; and lastly, some ages after this Theocritus appeared, who, forming himself on these first models, so far excelled as to give pastoral poetry all the perfection it was capable of receiving. Mem. Acad. Inscript. tom. ix. p. 101.

Bishop Lowth, already cited, produced from the writings of the Hebrews many perfect examples of this kind of poem. The first of those poems which deserve notice are the historical psalms, in celebration of the power and other attributes of the Deity, manifested in the miracles which he performed in favour of his people. One of the principal of these occurs in the 78th psalm; the style of which is simple and uniform, but the structure is poetical, and the sentiments occasionally splendid. Of a similar kind are the 105th and 106th psalms, very much resembling the 78th, as well in the subject as in the style. The mixture of ease and grace, displayed in the exordium, is the same in all. These psalms, both in plot and conduct, bear a surprising analogy to the hymns of the Greeks; a species of poetry which was in very early use among them, and almost entirely appropriated to the celebration of their religious rites. The subjects in general were the origin of the gods, the places of their birth, their achievements, and the other circumstances of their history. Such are all the poems of this kind now extant in the Greek; such are the elegant hymns of Callimachus, as well as those which are attributed to Homer. The poem of Theocritus, entitled the "Dioscouri," or the praise of Castor and Pollux, is also a genuine hymn, and very elegant in its kind; nor is it improperly classed among the Idyllions, which include all of this species. The 136th psalm may be referred to the class of those of the historical kind. The exordium commences with this well known distich:

"Glorify JEHOVAH, for he is good;
For his mercy endureth for ever:"

which, according to Ezra (iii. 10, 11.), was commonly sung by alternate choirs. Here the latter line of the distich, being added by the second choir, and subjoined to every verse (which is a singular case), forms a perpetual Epode. Hence we may collect the whole nature and form of the intercalary verse, or burthen of the song; which expresses in a clear, concise, and simple manner some particular sentiment, that seems to include virtually the general subject or design of the poem; and it is thrown in, at proper intervals, according to the nature and arrangement of it, for the sake of impressing the subject more firmly upon the mind. That the intercalary verse is perfectly congenial to the Idyllium, is evident from the authority of Theocritus, Bion, Moschus, and even of Virgil. The 107th psalm may be undoubtedly enumerated among the most elegant monuments of antiquity; and it is chiefly indebted for its elegance to the general plan and conduct of the poem. Another example might

might be selected from Isaiah; for by uniting the conclusion of the ninth chapter with the beginning of the tenth, ingeniously separated by the common division into chapters, we shall find a complete and connected prophecy against the kingdom of Israel or Samaria. (Is. ix. 8. x. 4.) It is replete with terror and solemnity, and possesses a degree of force and sublimity to which the Idyllium seldom rises; though it preserves the form of the Idyllium so perfect and express, that it cannot with propriety be referred to any other class. Besides the instances already mentioned there are others, and probably not a few (in the book of Psalms particularly), which may be equally accounted of the Idyllium species. To this class belong more especially those in which some particular subject is treated in a more copious and regular manner than is usual in compositions strictly lyric. Such is the 104th psalm, in which the poet embellishes his noble subject with the clearest and most splendid colouring of language; and with imagery the most magnificent, lively, diversified, and pleasing, at the same time select, and happily adapted to the subject. Nothing, says our learned author, of the kind extant, can be conceived more perfect than this hymn, whether we consider it with respect to its intrinsic beauties, or as a model of that species of composition. The Greek hymns consisted chiefly of fables, and these fables regarded persons and events, which were neither laudable in themselves nor greatly to be admired: "indeed," says the ingenious prelate, "I do not recollect any that are extant of this sublime nature, except that of the famous stoic Cleanthes, which is inscribed to Jove, that is, to God the Creator, or, as he expresses himself, "to the Eternal Mind, the Creator and Governor of nature." It is doubtless a most noble monument of ancient wisdom, and replete with truths not less solid than magnificent."

The hymn of David; just mentioned, deservedly occupies the first place in this class of poems; and that which comes the nearest to it, as well in the conduct of the poem as in the beauty of the style, is the 139th psalm, which, though perhaps excelled by the former in the plan, disposition, and arrangement of the matter, is not in the least inferior in the dignity and elegance of the figures and imagery.

IDYMA, or IDYMUS, in *Ancient Geography*, a town and also a river of Asia Minor, in Caria; called *Idimus* by Ptolemy.

IDYRUS, a town and river of Asia, in Pamphylia.

JEACOCK, SAMUEL, in *Biography*, brother to the celebrated president of the Robin-Hood society, was by trade a baker, and carried his loaves to his customers on his own shoulders. He would not have been mentioned here among musical dilettanti merely for being fond of music, but for a peculiar talent of which we have never known any other person possessed. This worthy tradesman played a little on several instruments, but chiefly the tenor; and at the Madrigal society, established in his time, he used to sing the base part. He was an excellent judge of instruments played with the bow; their strings, tone, and construction; found out their defects, and often cured them. He was one of the best ringers and swimmers of his time; and even when in years, was very expert in other manly exercises. But his most extraordinary talent was the being able, without knowing the names of the keys of the harpsichord, to play upon it, with his 10 fingers, without the least hesitation, any number of changes in a peal of 10 bells, which changes amounted to 3,628,800. After seeing as well as hearing this astonishing performance on our own instrument, we tried to express, in musical notation, the changes in favourite peals on eight or ten bells, but were totally unable to play them even with the notes before us,

or to meet, among the greatest performers on the harpsichord, with any one that could. The melodies produced by these changes are so wild and unlike any thing to which the hand or the eye is accustomed, that they are as difficult to a consummate master, as the first tune to a child who has just learned the gammut. See BELLS and CHANGES.

JEALOUSY, in *Ethics*, is that peculiar uneasiness which arises from the fear that some rival may rob us of the affections of one whom we greatly love, or suspicion that he has already done it. The first sort of jealousy is inseparable from love, before it is in possession of its object; the latter is often unjust, generally mischievous, always troublesome.

JEALOUSY, *Waters of*: See WATERS.

JEAN, *St.*, in *Geography*, an island of Switzerland, in Biemme lake.—Also, a town of Canada, on the left bank of St. Laurence. N. lat. 46° 39'. W. long. 71° 33'.—Also, a town of Canada, on the right bank of St. Laurence. N. lat. 47° 12'. W. long. 70° 12'.

JEAN *d'Angely, St.*, a town of France, and principal place of a district, in the department of the Lower Charente. The place contains 5400, and the canton 13,827 inhabitants, on a territory of 222½ kilometres, in 20 communes. The chief article of trade in this place is brandy, and it has a manufacture of woollen stuffs. N. lat. 45° 59'. W. long. 0° 25'.

JEAN *d'Aulph, St.*, a town of France, in the department of the Leman, and chief place of a canton, in the district of Thonon. The place contains 1918, and the canton 6344 inhabitants, on a territory of 187½ kilometres, in 6 communes.

JEAN *de Bournay, St.*, a town of France, in the department of the Isère, and chief place of a canton, in the district of Vienne; 12 miles E. of Vienne. The place contains 2848, and the canton 11,733 inhabitants, on a territory of 237½ kilometres, in 14 communes.

JEAN *de Breveley, St.*, a town of France, in the department of Morbihan, and chief place of a canton, in the district of Ploermel. The place contains 2573, and the canton 11,337 inhabitants, on a territory of 262½ kilometres, in 7 communes.

JEAN *de Daye*, a town of France, in the department of the Channel, and chief place of a canton, in the district of St. Lô. The place contains 124, and the canton 8197 inhabitants, on a territory of 132½ kilometres, in 17 communes.

JEAN *du Gard*, a town of France, in the department of the Gard, and chief place of a canton, in the district of Alais. The place contains 3203, and the canton 5101 inhabitants, on a territory of 87½ kilometres, in 3 communes.

JEAN *de Lofne*, a town of France, and principal place of a district, in the department of the Côte d'Or; 15 miles S.E. of Dijon. N. lat. 47° 5'. E. long. 5° 19'.

JEAN *de Luz, St.*, a sea-port town of France, in the department of the Lower Pyrenées, and chief place of a canton, in the district of Bayonne, situated in the bay of Biscay; the harbour of which has lately been improved; 10 miles S.W. of Bayonne. The place contains 2553, and the canton 8457 inhabitants, on a territory of 155 kilometres, in 9 communes. N. lat. 43° 23'. W. long. 1° 35'.

JEAN *de Maurienne, St.*, a town of France, and chief place of a district, in the department of Mont Blanc, lately capital of a county in Savoy, and the see of a bishop, near the union of the rivers Arve and Aral: besides the cathedral it has two parish churches and a convent; 27 miles S.E. of Chambery. The place contains 2258, and the canton

17,453 inhabitants, on a territory of 440 kilometres, in 20 communes. N. lat. 45° 16'. E. long. 6° 16'.

JEAN du Mont, a town of France, in the department of the Vendée, situated near the sea-coast; 7 miles W.S.W. of Challons.

JEAN Pied-de-Port, St., a town of France, in the department of the Lower Pyrenées, and chief place of a canton, in the district of Mauleon, having a citadel on a rock, at the entrance of one of the passages of the Pyrenées; 12 miles S.E. of Bayonné. The place contains 1286, and the canton 8205 inhabitants, on a territory of 417½ kilometres, in 20 communes. N. lat. 43° 9'. W. long. 1° 10'.

JEAN en Rayans, a town of France, in the department of the Drôme, and chief place of a canton, in the district of Valence; 18 miles E.N.E. of Valence. The place contains 2808, and the canton 6791 inhabitants, on a territory of 232½ kilometres, in 10 communes.

JEAN de Soleymieu, St., a town of France, in the department of the Loire, and chief place of a canton, in the district of Montbrison; 7 miles S. of Montbrison. The place contains 574, and the canton 7964 inhabitants, on a territory of 180 kilometres, in 16 communes.

JEAN de Vergt, St., a town of France, in the department of the Dordogne, and chief place of a canton, in the district of Périgueux. The place contains 886, and the canton 9098 inhabitants, on a territory of 277½ kilometres, in 18 communes.

JEAN de Vertus, St., a town of France, in the department of the Isère; 24 miles S.S.E. of Grenoble.

JEAN-CAPELLE, in *Ichthyology*, a name given by Ruysch, and some others, to the fish called by authors the *faber Indicus*, or Indian doree; and more expressly named by Artedi the zeus with a forked tail.

JEAN-DE-BARRE, in *Geography*, an island of Africa, in the kingdom of Senegal, about 15 miles in circumference.

JEANNIN, PETER, in *Biography*, was born in 1540, and brought up to the profession of the law. He was, at an early age, appointed advocate in the parliament of Burgundy, and soon distinguished himself by his eloquence and force of reasoning. He was afterwards appointed agent for the affairs of the province. In this situation he nobly resisted, with all his power, the order for perpetrating, at Dijon, the massacre of the Protestants on St. Bartholomew's day, which took place in Paris and other cities. This was particularly meritorious in him who was a most zealous Catholic, so much so that he joined the leaguers in support of their religion; a circumstance which proved highly serviceable to the kingdom; for, being deputed by the duke of Mayenne to negotiate with Philip of Spain, the declared protector of the league, he soon discovered that the real design of that prince, in supporting the civil war in France, was to gain possession of some of its best provinces. On his return, therefore, he exerted himself to detach the duke from the Spaniards, and to acknowledge his lawful sovereign. Henry IV. made him a member of his council, and kept him at his court, where nothing was undertaken without his advice. He died at the age of 82, in the year 1622. This respectable man witnessed the succession of seven kings to the throne of France. His *Memoirs and Negotiations* were published, in 1659, at Paris, in folio; but they have since been printed in four volumes 12mo. They are regarded as excellent guides for the management of important and difficult concerns. Moreri.

JEAN-RABEL, in *Geography*, a town of the island of Hispaniola, at the mouth of a river on the N.W. coast; 10 miles N.E. of St. Nicholas Mole. N. lat. 19° 56'. W. long. 73°.

JEATPOUR, a town of Bengal; 20 miles N. of Kishinagar.

JEBAKSHOUR, a town of Turkish Armenia; 45 miles S. of Arzenagan.

JEBARA CUNACA, a town of Japan, in the island of Nippon; 20 miles N.N.E. of Jedo.

JEBB, SAMUEL, M.D.; in *Biography*, a man of learning, and editor of several works, was born at Nottingham. He was entered of Peterhouse, Cambridge, and, imbibing the sentiments of the non-jurors, he accepted the office of librarian to Jeremy Collier. During his residence in college, he published a translation of "Martin's Answers to Emelyn," 1718; and an edition of "S. Justin Martyris Dialogus cum Tryphone," Gr. Lat. 8vo. Lond. 1719. When he quitted Cambridge he married the daughter of an eminent apothecary in London, who gave him instructions in pharmacy. Still, however, he continued his literary pursuits; and in 1722 undertook the editorship of a periodical work, entitled "Bibliotheca Literaria," which only extended to 10 numbers, notwithstanding it was supported by the contributions of several distinguished scholars. He likewise edited the following works: "De Vita et Rebus gestis Mariæ Scotorum Reginæ," 8vo. 1725, which was compiled from original records and authors of credit; "Aristidis Orationes, cum Notis," in two volumes 4to. Oxford, 1728, which is a valuable edition of this Greek orator; "Joannis Cæii Britanni de Canibus Britannicis, de variorum Animalium et Stirpium, &c. de Libris propriis, de Pronunciatione Græcæ et Latinæ Linguae," 8vo. 1729; "Baconi Opus Majus," folio, 1733; "Hodii Lib. ii. de Græcis illustribus, &c." 8vo. 1742; to which he prefixed a Latin dissertation on the life and writings of the author. It is not known at what period Mr. Jebb received the degree of M.D. He settled at Stratford, in Essex, and continued to practice medicine there till late in life, when he retired, with a moderate fortune, into Derbyshire, where he died in 1772. Gen. Biog. Nichols's Anecdotes of Bowyer.

JEBB, Sir RICHARD, Baronet, M.D. was born at Stratford, in Essex, where his father, the subject of the preceding article, practised as a physician. He had a liberal classical education at Oxford; but being by principle a non-juror, from his father, he could not be matriculated, nor take any degree at that university. He afterwards studied medicine in London and in Leyden; and from the university in the latter city he obtained the degree of doctor of medicine. Upon settling in London he entered as licentiate of the College of Physicians; and in the year 1768 he was elected a fellow of that body. He was for some time physician both to St. George's hospital, and to the Westminster infirmary. As a practitioner he became so eminent, that when the duke of Gloucester fell dangerously ill in Italy he was requested to go abroad to attend the health of that prince; and on this occasion his conduct gave so much satisfaction that he was called abroad a second time to visit the same prince, on a future illness, in 1777. About this time he was made physician-extraordinary to the king; and in 1780 was appointed physician in ordinary to the Prince of Wales. He not only held these offices about the royal family, but was for several years one of the physicians chiefly employed by them. Upon the death of sir Edward Wilmot, in 1768, he was appointed one of the physicians in ordinary to his majesty; but this office he did not enjoy many months; for, being in attendance on two of the princesses, who were affected with the measles, he was suddenly attacked with a fever in their apartments at Windsor, and fell a victim to the disease, after a few days illness, on the 4th day of July, 1787, in the 58th year of his age.

Jebb, John, an eminent scholar, divine, and physician, was the eldest son of the Rev. John Jebb, dean of Cashell, sprung from a family in Nottinghamshire; and was born at London in the year 1736. Having finished his early education at several schools in England and Ireland, he was admitted a pensioner of Trinity-college, Dublin, in 1753, and in the following year entered at St. Peter's college, Cambridge, where, in 1757, he took the degree of B.A., and commenced the office of private tutor. In 1760 he proceeded to the degree of M.A. and was confirmed fellow. In 1762 he received deacon's orders, and in the following year those of priest. He was elected by the university to the rectory of Ovington, in Norfolk, in 1764, and in the same year married Ann, daughter of the Rev. J. Torkington and of lady Dorothy Sherrard, with whom he lived in happy union of sentiment and affection to the time of his death. In 1765 he published, in conjunction with two friends, viz. the Rev. Robert Thorpe and the Rev. George Wollaston, a work held in high estimation at Cambridge and elsewhere, and entitled "Excerpta quædam à Newtoni Principiis Philosophiæ Naturalis, cum notis Variorum," 4to. On the return of our author to Cambridge in 1766, he commenced an important era of his life. Resuming his office as private tutor, and reading occasional lectures, he entered with ardour into the concerns of the university. In 1768 he began a course of lectures on the Greek Testament, in the prosecution of which he avowed opinions of a very liberal kind; and in his political sentiments he ranked himself among the advocates for popular measures. In both these respects he became the undisguised and zealous advocate of reformation both in church and state. Having in 1769 been presented to the vicarage of Flixton, near Bungay, and to the united rectories of Homersfield and St. Cross, and being also nominated chaplain to his wife's relation, the earl of Harborough, he from this time divided his residence for some years between Bungay and Cambridge. In 1770 he published a "Short Account" of his theological lectures, which had subjected him to some obloquy, and in 1772 he re-edited this "Account" with large additions. About this time he took an active part with those who sought relief in the matter of ecclesiastical subscription, and appeared as an advocate of the cause in the Whitehall Evening Post, under the assumed appellation of "Paulinus." His letters were collected in a pamphlet, published in 1772. He was also anxious for the improvement of academical education in Cambridge; with a view to which he wished to establish annual examinations. But all his liberal efforts and plans proved ineffectual with regard to their main object, although it has been thought that they were not altogether fruitless as to their general influence on the state of the university. Soon after this time, Mr. Jebb, actuated by an integrity and zeal which did him great honour, determined to withdraw from the public service of a church, the established doctrines of which he disapproved; and accordingly in September 1775, he resigned all his livings, and in September 1776, he finally left Cambridge. He was now entering anew, as it were, into life; and with a view to an honourable and useful mode of exercising his talents, and of procuring a subsistence, he determined, under the advice of his relation sir Richard Jebb, to assume the medical profession. The necessary qualifications it would not require much time to attain, when we consider the comprehensive mind and the indefatigable assiduity of Mr. Jebb; and therefore after devoting his attention for some time to the studies connected with the profession which he had in view, he obtained in 1777 a diploma of M.D. from St. Andrews, and was admitted a licentiate of the London college, and commenced practice in

February 1778, pursuing at the same time various means of medical improvement. In this year he was elected a fellow of the Royal Society. In his political career he connected himself with those who were adverse to the American war; and as he was always ardent in every cause which he deemed of importance, his zeal on this occasion obstructed his professional success, though he had many friends who thought highly of his talents, and who much wished to serve him. Of his attention to the duties of his profession he gave evidence to the public in 1782 by a work entitled "Select Cases of the Disorder commonly termed the Paralysis of the Lower Extremities; to which is added A Case of Catalepsy." These cases tend to support the practice of Mr. Pott in applying caustics to the tumour of the spine in the above-mentioned paralysis. The ardour of Dr. Jebb's mind, the assiduity of his application, the various anxieties he felt for the interests of the public, and the fatigues which he underwent in his endeavours to promote them, impaired his bodily health and strength, and reduced him to a state of debility, under the progress of which he sunk, whilst he retained the full exercise of his faculties and benevolent feelings; so that he terminated a course of honourable and active service on March 2, 1786, in the 51st year of his age. His works consist of his "Plan of Theological Lectures;" "A Harmony of the Gospels;" letters on the subject of subscription; sermons and theological tracts; papers relative to the state of public education at Cambridge; of medical cases; and of political and miscellaneous papers. They were collected and published in three large volumes 8vo. in 1787 by Dr. John Disney, who has prefixed memoirs of his life, to which we are indebted for the preceding article.

JEBHAN, in *Geography*, a town of Hindoostan, in Lahore; 55 miles N.N.E. of Behnbur.

JEBINIANA, a town of Tunis; 15 miles S.E. of El-Jemme.

JEBNA, a town of Palestine, on the site of the ancient city of Gath, afterwards called "Ibelin;" 10 miles S. of Jaffa.

JEBUGY, a town on the S. coast of Mindanao. N. lat. 7° 15'. E. long. 122° 55'.

JEBUS, in *Ancient Geography*, an ancient name of Jerusalem; before it was conquered by the Israelites. It was so called from its founder Jebus, son of Canaan, and father of the Jebusites. Josh. xviii. 28. Judg. xix. 11.

JECARINUS PISCIS, in *Ichthyology*, a name given by Gaza, and many other writers, to the fish more commonly called *hepatus piscis*, by some *jecur marinum*.

JECREHEL, in *Ancient Geography*, a name given to Petra, the capital of Arabia Petræa; said to have been derived from the name of a rock, from the summit of which Amaziah, king of Judah, precipitated 2000 Idumæans whom he had taken in battle.

JECUR. See **LIVER**.

JECUR marinum, in *Ichthyology*, is used by Hermolaus and some other writers in the same sense with *hepatus*.

JECUR uterinum. The placenta is by some thus called, from the supposed similitude of its figure and office with that of the liver.

JEDBURGH, anciently called *Jedworth*, in *Geography*, a royal borough, and capital town of the county of Roxburgh in Scotland, is pleasantly situated on the banks of the river Jed, and is nearly surrounded with lofty eminences. The town lays claim to remote antiquity. The two Jedburghs, or Jedworths, according to Chalmers, are the oldest parishes in Scotland. As early as the middle of the ninth century, bishop Eborac founded a church and village

on the banks of the Jed, at or near this place. At the commencement of the Scoto-Saxon period a castle was standing here, and the village was advanced to the dignity of a burgh, under the influence of the baron. Malcolm IV. is said to have resided very frequently at this castle, and finished his youthful career at this place in the year 1165. In several charters granted by this monarch, by William and Alexander II., Jedburgh is called "Our Burgh." Other monarchs, and nobles of the first rank, made the castle of Jedburgh a place of residence, and many public acts were executed here; and after the demise of Alexander III. the town, monastery, and castle were involved, for several ages, in bloodshed and devastation. Hamilton, an amiable poet, thus laments the effects of wars, on

— "Jedas ancient walls, once seat of kings."

In 1147, David I. founded a monastery for canons regular at this place, and provided it with ample revenues arising from tithes, "the culture of the mill of Jedworth," and a saltwork. Malcolm IV. augmented these revenues. The bishop of Glasgow, and the abbot of Jedburgh, had many altercations respecting their dignities, liberties, customs, rents, &c. and at length the former obtained a decided ascendancy over the latter. The wars between the Scots, and king Edward I. of England, involved the abbot and his canons in ruin. They were driven from their monastery, and sought refuge in different religious houses in England. At the Reformation, the monastery became the property of the king by annexation. A convent of Carmelites was founded here in 1513. Besides the town of Jedburgh, the parish comprehends a large district, which is divided into three parts by the intervention of the parishes of Abbot-rule and Oxnam. The lower division, on both sides of the river, forms the principal part of the parish; the second contains the district of old Jedburgh; and the third, or upper part, laying on the east side of the river, and extending to the border mountains, constitutes the barony of Edgarstown. Besides the established church, the town contains three other places of worship; respectively called the Burger-meeting, anti-Burger-meeting, and Relief congregation. Jedburgh is governed by a provost and three bailies, assisted by a select council of the principal inhabitants. Here are a weekly market, and several fairs. The vicinity of the town is noted for its orchards. In 1800 the number of houses was 676, and of inhabitants 3834. Chalmers Caledonia, vol. ii. —Sinclair's Statistical Account of Scotland, vol. i.

JEDNITZA, a town of Hungary, on the borders of Moravia; 30 miles N. of Topoltzan.

JEDO, JEDDO, or *Yeddo*, the capital of Japan, centrally situated on a bay of the same name, on the S.E. side of the chief island Nippon. The houses never exceed two stories, and have numerous shops towards the streets. The harbour is so shallow, that an European ship would be obliged to anchor at the distance of five leagues. The city towards the bay forms the figure of a crescent, and is of such extent, as the Japanese affirm, that it would occupy a person 21 hours to walk round its circumference, which might thus amount to 21 leagues: and they say, that it is seven leagues in length by five in breadth. Thunberg observes, that it is said to be 63 British miles in circumference, and at any rate rivals Pekin in size. A large river, not named by Kämpfer, but by others called Tonkag, passes through the city, and discharges itself into the haven by five streams, over each of which is a bridge: a considerable branch surrounds the castle, and fills its ditches, over which is the principal bridge, called Nipponbas, which is the centre whence roads and distances are measured. These

streams supply several canals. The bridge now mentioned opens on both sides into a long street, 50 paces wide, that traverses the whole city, and that is thronged with passengers, many of whom are richly dressed, and carried in their chairs and palanquins. This city has suffered much from repeated earthquakes, and also from a fire, which, in 1772, is said to have consumed six leagues of it in length, and three in breadth. Since these calamities have occurred the buildings have been improved, the streets have been widened and made to cross one another at right angles, and several palaces, temples, monasteries, and public edifices have been erected in a more beautiful style. The most superb structure is the emperor's palace, which is surrounded with stone walls and ditches with draw bridges, forming of itself a considerable town, which is said to be five leagues in circumference. It consists of three inclosures, the innermost of which is the residence of the emperor, and behind it are magnificent gardens, and the other two are occupied by the princes and lords that compose his court. The police of the town is under the conduct of two governors, who act alternately for a year; and besides, there are several subordinate magistrates who superintend the streets, the tradesmen, handicrafts, &c. who are very numerous, and of various descriptions. Like other Japanese cities, Jedo has neither walls nor fortifications; but it includes a great number of shops and markets, furnished with all sorts of necessaries and merchandize, which are sold at a higher price than in any other city of the empire, on account of the population of the place, and the difficulty of importation. N. lat. 36° 30'. E. long. 140°.

JEDOGAWA, a river of Japan, which passes by Ofaka, where it is crossed with several bridges of cedar, from 300 to 360 feet in length.

JEDOWITZ, a town of Moravia, in the circle of Brunn; 10 miles N.N.E. of Brunn.

JEEAGUR, a town of Bengal; 43 miles S.S.E. of Currukpour.

JEEMBAREE, a town of Bengal; 12 miles N.N.W. of Koonda.

JEEMWOREE, a town of Hindoostan, in Oude; 40 miles E. of Fyzabad.

JEER-CAPSTAN, in *Nautical Language*. See CAPSTAN.

JEERS, or JEARS, in a *Ship*, an assemblage of tackles, by which the lower yards of a ship are hoisted up along the mast to their usual station, or lowered from thence as occasion requires; the former of which operations is called *sewaying*; and the latter *striking*.

In a ship of war the jeers are usually composed of two strong tackles, each of which has two blocks, *viz.* one fastened to the lower mast-head, and the other to the middle of the yard. The two blocks which are lashed to the middle, or slings of the yard, are retained in this situation by means of two cleats, nailed on each side, whose arms inclose the ropes by which the blocks are fastened to the yard. The two ropes which communicate with these tackles lead down to the deck on the opposite side of the mast, according to the situation of the upper jeer-blocks. The jeers in merchant-ships have usually two large single blocks on the opposite side of the mast-head, and another of the same size in the middle of the yard. The rope, which communicates with these, passes through one of the blocks hanging at the mast-head, then through the block on the yard, and afterwards through the other hanging-block upon the mast. To the lower ends of this rope, on the opposite sides of the mast, are fixed two tackles, each of which is formed of two double blocks, the lower one being hooked to a ring-bolt in the deck, and the upper one spliced or seized into the lower end of the great rope above, which is called the

the tye. By this contrivance the mechanical power of the tackle below is transmitted to the tye, which, communicating with blocks on the yard, readily sways up or lowers it, either by the effort of both jeers at once, on the opposite sides of the mast, or by each of them separately one after another. Falconer.

They say a man is brought to the jeers, when going to be punished at the jeer-capitan. This is done in the following manner; a capitan-bar being thrust through the hole of the barrel, the offender's arms are extended at full length cross-wise, and so tied to the bar; having sometimes a basket of bullets, or some other like weight, hanging by his neck. In this posture he continues till he be either brought to confess some plot or crime, whereof he is suspected; or that he has suffered what he is censured to undergo, at the discretion of the captain.

JEETKA, in *Geography*, a town of Bengal; 28 miles N.N.W. of Dacca.

JEFFERIES, GEORGE, in *Biography*, an English judge, whose name has already been mentioned in some foregoing articles with becoming indignation, was born at Acton in Denbighshire, and educated at Westminster school, after which he removed to the Inner Temple, where he studied the law with great application. By attaching himself to the duke of York (see JAMES II.) he obtained the place of a Welch judge, the honour of knighthood, and the chief-justice of Chester. In 1683 he was appointed chief-justice of the king's bench, and in 1685 lord chancellor. His cruelties on the western-circuit upon the followers of the duke of Monmouth were of the most savage kind: they were, however, quite satisfactory to the king, who merrily (a wretched subject for royal merriment) denominated this particular circuit "Jefferies's campaign." By supporting all the arbitrary measures of the court, he rendered himself so obnoxious to the people, that when James abdicated the throne and fled from the kingdom, he would gladly have followed his master, but being detected in the disguise of a sailor, he was seized, and would have been torn to pieces by the people, had he not been rescued by the civil power: he was afterwards committed to the Tower, where he died in 1689. Hume's Hist.

JEFFERSON, in *Geography*, a county of Kentucky, in America, bounded N. and W. by Ohio river, S. by Nelson county, and S.E. and E. by Shelby; it contains 8395 inhabitants, of whom 2330 are slaves. The chief town is Louisville.—Also, a county of Georgia, formed in 1796 from the counties of Burke and Warren, bordering on Ogechee river, and Briar and Big creeks. It contains 5684 inhabitants.—Also, a county in Tennessee, Hamilton district, watered by several rivers, and containing, together with the county of Cocke, 9017 inhabitants, of whom 695 are slaves.—Also, a county of the state of Ohio, bounded S. by the Ohio, and N. by the lake Erie, including the tract called the Connecticut reserve; and containing 8766 inhabitants. Its chief town is Stubenville.—Also, a post-town of Virginia, on the N. side of Roanoke river, 19 miles below the Oeconeachey islands. N. lat. 36° 32'.—Also, a town in Grafton county, North Hampshire, containing 112 inhabitants.—Also, a town of Pennsylvania, nine miles from Amity, and seven from Scottville.—Also, a fort in the state of Ohio, situated on a small stream, which falls into the Great Miami, containing about 100 men; 21 miles N. of fort St. Clair. N. lat. 40° 4'.—Also, a fort on the E. bank of the Mississippi, in Kentucky, near the line of the state of Tennessee.

JEFFERY, THOMAS, in *Biography*, son of a respectable merchant, was born at Exeter towards the close of the

seventeenth century. He received his academical education in the seminary under the care of Mr. Joseph Hallet; in connection with whom he afterwards, for some time, preached. In the year 1726 he settled at Little Baddow, in Essex, where he remained but two years, when he returned to his native city. He had already exhibited talents which led his friends to expect much from his future labours, but Death, who pays no regard to superior abilities, took him away while he was still a very young man. His publications, which were chiefly in defence of our common religion, met with the approbation of the wise and the learned, and even extorted high encomiums from his principal antagonist Mr. Anthony Collins. His principal pieces are entitled "The true Grounds and Reasons of the Christian Religion, in opposition to the false Ones, &c.;" "Christianity the Perfection of all Religion, Natural and Revealed, &c." Mr. Jeffery possessed a strong intellect; he devoted himself to the investigation of the scriptures: so absorbed was he in application and thought, that he would go a whole day without his usual meals, and without recollecting that abstinence to which were owing the languor and exhausted spirits which he felt in the evening. He had an expanded, liberal, and candid mind. Dr. Kennicott highly applauded Mr. Jeffery's answers to Collins; and Dr. Doddridge speaks of the writer as having treated the subject of prophecy, and the application of it in the New Testament, more studiously, perhaps, than any one since the time when Eusebius wrote his "Demonstratio Evangelica." Monthly Mag.

JEFFERY, in *Geography*, a town of North Carolina; 40 miles W.S.W. of Halifax.

JEFFERY'S CREEK, a river of South Carolina, which runs into the Great Pedee. N. lat. 34° 8'. W. long. 79° 29'.

JEFFERYS, GEORGE, in *Biography*, was born at Weldon, in Northamptonshire, and educated at Westminster school, and Trinity college, Cambridge, where he obtained a fellowship. He afterwards studied the law as his future profession, but never practised in it. He died in 1755, at the age of 77: he had in the preceding year published his works in a collective form in one volume quarto, containing miscellanies in prose and verse, and among other pieces, the tragedies of Edwin and Merope.

JEFFREY'S LODGE, in *Geography*, a sand-bank on the coast of Massachusetts, between cape Ann and Casco bay, extending from the N.W. to the S.E.; between 42° 40' and 47° 37' 30" N. lat. and between 68° 52' 30" and 69° 45' W. long.

JEGENOE, a small island of Denmark, in Lyngby gulf, containing two villages. N. lat. 56° 39'. E. long. 8° 38'.

JEGNI-BASAR, a town of Asiatic Turkey, in Natolia; 28 miles N. of Mogla. N. lat. 37° 35'. E. long. 28° 12'.

JEGNICAN, a town of European Turkey, in Bulgaria; 12 miles E.S.E. of Sophia.

JEGNI-KEVI, a town of Asiatic Turkey, in Natolia; 24 miles N.N.W. of Degnizlu.—Also, a town of European Turkey, in Romania; 44 miles W.S.W. of Burgas.

JEGNIPANGOLA, a town of European Turkey, in Bulgaria; 70 miles E.S.E. of Driftra.

JEGNISHEHR, a town of Asiatic Turkey, in Natolia; 15 miles S. of Isnik.

JEGNISHEHR, or *Janickere*, a town of Asiatic Turkey, in Natolia, situated near ruins, supposed to be those of Antioch on the Meander; 28 miles W. of Degnizlu.

JEGUN, a town of France, in the department of the Gers, and chief place of a canton, in the district of Auch; 13 miles E. of Condom. N. lat. 43° 45'. E. long. 0° 32'.

The place contains 2050, and the canton 7978 inhabitants, a territory of 215 kilometres, in 16 communes.

JEHAGH. See GIAGH.

JEHANABAD, in *Geography*, a town of Hindoostan, in Bahar. N. lat. 25° 3'. E. long. 83° 58'.

JEHAOUL, a town of Hindoostan, in Moultan; 15 miles W.N.W. of Adjodin.

JEHENABAD, a town of Hindoostan, in Bahar; 20 miles S.S.W. of Patna. N. lat. 25° 12'. E. long. 15° 11'.

JEHOVAH, in *Theology*, one of the scripture names of God; signifying the Being who is self-existent, and who gives existence to others. (See GOD.) When God declared to Moses, that he had not made known his name Jehovah, he does not mean that they were ignorant of him, as God the creator, self-existing; but that he had not revealed this name, which so well expresses his nature, and by which he would be invoked afterwards.

So great a veneration had the Jews for this name, that after the Babylonish captivity they left off the custom of pronouncing it; whereby its true pronunciation was forgotten. They call it *tetragrammaton*, or the name with four letters; and believe that whoever knows the true pronunciation of it, cannot fail to be heard by God. Simon the Just, they say, was the last who was acquainted with it. The author of the Talmud denounces terrible curses against those who pronounce it; they scruple even trying to do it; and pretend that the angels have not this liberty. But it would be endless, and no less unprofitable, to recite the various whims and fancies which the Jews, the Cabbalists, and the Mahometans have indulged with regard to this name; and that of Allah, corresponding to it among the latter. See ADONAI.

JEJUARA, in *Geography*, a town of Hindoostan; in Bahar; 18 miles N.W. of Durbungah. N. lat. 26° 19'. E. long. 85° 50'.

JEJUNE STYLE. See STYLE.

JEJUNUM, the second of the small guts; thus called from the Latin *jejunus*, hungry; because always found empty. See INTESTINES.

JEJURRY, in *Geography*, a town of Hindoostan, in the country of Viliapour; 12 miles E. of Poorundar.

JEJURY, a town in the East Indies, near which is an elegant temple, of considerable celebrity among the Hindoos. It is thus described by major Moor in his Hindoo Pantheon. "A handsome temple, dedicated to the worship of an avatara of Siva under the name of Kande Rao, (see KANDEH RAO,) is at Jejury, a town of some extent, about thirty miles to the S.E. of Poona. I have visited this temple. It is situated in a beautiful country, on a high unconnected hill, and has a very commanding and majestic appearance: the temple, surrounding walls, and steps up to it, are well built of fine stone. I have had occasion to remark, and it has also doubtless been remarked by others, that the seats of churches built by the Jesuits are always on the most healthy, beautiful, and picturesque points, evincing the judgment and taste of that wonderful order of men: the same may, I think, be observed of Hindoo temples; generally, after allowing for the necessary proximity of water, the most beautiful the neighbourhood affords.

"The obtrusive importunity of the beggars prevented me from examining this fine temple at Jejury so fully as I wished; indeed, from their officiousness I could scarcely examine it at all. The Brahmans informed me, on subsequent enquiries, that a stone is there, about two feet square, on which are two Lingas (see LINGA), one larger than the other, whence Kande Rao, and I suppose Malfara, his consort, (see MALFARA,) sprang: there are also two lingas

of him, one of gold, one of silver, and one of silver of Malfara; all richly ornamented on great days, when they are mounted on horseback or on elephants. If, however, there really be such massive images in metal, they could scarcely be carried by a horse. Images of lighter materials are, I apprehend, substituted; or, metallic heads are embodied, armed and arrayed with clothes; and thus carried about or exhibited. I have several of these hollow heads, to which bodies, &c. could easily be appended: I have also several brass masks, some as large as a man's face, that may answer, and, peradventure, may have answered on similar occasions.

"Jejury temple is very rich: it is said to expend half a lak'h (50,000) rupees, about 600*l.* sterling, yearly in the expences and establishment for Kande Rao; horses and elephants are kept for him: he and his spouse are bathed in Ganges water, and rose water, perfumed with *atr*, and decorated with gems. The revenues, like those of most other temples, are derived from houses and lands given by pious people, and from presents and offerings constantly making by all descriptions of votaries and visitors, according to their means, or to their faith, hope, or charity. At the annual jatra, or fair, which commences on the last day of the dark half of the lunar month Chaitra (in January) a lak'h (100,000) or more persons visit Jejury. It is customary to sacrifice a sheep; and the Brahmans assured me, that twenty, or, in particular years, thirty thousand are slain on this occasion, and to the honour and glory of Kande Rao."

In another work the same author more particularly describes Jejury as a pretty large town, but, with the exception of a few shopkeepers and retailers of fruit, vegetables, and such small wares, apparently wholly inhabited by Brahmans and beggars, the latter of whom were exceedingly importunate and troublesome. Were it not for its temple, the town is not deserving particular notice. The ascent to the temple is on the north-eastern side, by a handsome flight of broad stone steps, and being of considerable height, and rather steep, the walk up is somewhat fatiguing: arches are in many places thrown across over the stairs, which have, on each side, frequent buildings of stone of a pyramidal form for lights; others have the appearance of recesses. The inner temple, where the deity is placed, is ancient and not very handsome; but the enclosure is elegant and extensive, beautifully finished with fine stone, and the pavement is also of large flags. The enclosure is open, and commands a fine view of the surrounding country. There is a very large bank, elegantly built with fine stone, a little to the southward of the hill on which the temple stands, which is about two miles from a range of hills that runs in a south-easterly direction.

In this temple are kept many beautiful young women as singers and dancers: from the account received by major Moor on the spot, there were more than two hundred at the time of his visit (1792); such as he saw were very handsome. They are here called *Murty*; which see.

JEKIMABAD, a town of Persia, in the province of Segestan; 60 miles E.N.E. of Bost.

JEKISINOKORI, a town of Japan, in the island of Nippon; 65 miles N.N.E. of Meaco.

JEKYL, Sir JOSEPH, in *Biography*, an English lawyer, was born in Northamptonshire in 1663. Little is known of him in early life, but he distinguished himself in the reign of William III. by a steady attachment to the Whigs. He was appointed one of the managers on the trial of Dr. Sacheverel, and on the accession of George I. he was knighted, made master of the Rolls, and a privy counsellor. He successfully maintained the independence of his office against

the lord chancellor King, in a pamphlet, entitled "The Judicial Authority of the Master of the Rolls stated and vindicated." Sir Joseph was an excellent patriot, a kind and benevolent man: when it was proposed to subsidize foreign mercenaries, he contended that the practice was repugnant to the maxims by which England, in former times, had steered and squared her conduct with relation to her interest abroad; that the navy was the natural strength of Great Britain; its best defence and security: but if, in order to avoid a war, they should be so free-hearted as to buy and maintain the forces of foreign princes, they were never like to see an end to such extravagant expences. On another occasion, when it was proposed by his own friends to prosecute the duke of Ormond for high treason, sir Joseph said, if there were room for mercy he hoped it would be shewn to that noble, generous, and courageous peer, who had in the course of so many years exerted his talents for the good and honour of his country. He died in the year 1738. His brother, doctor Thomas Jekyl, was educated at Trinity college, Cambridge; became vicar of Rowd in Wiltshire, lecturer at Newland in Gloucestershire, and minister of St. Margaret's-chapel, Westminster. He was author of several sermons and tracts; and of an "Exposition of the Church Catechism." Smollett's Continuation.

JEKYL Island, in *Geography*, a small island in the Atlantic, near the coast of Georgia, at the mouth of the Alamaha. N. lat. $31^{\circ} 7'$. W. long. $81^{\circ} 40'$. It is said, that the sound at the mouth of this river will afford safe riding for a dozen ships of 40 guns.

JELALABAD, a town of Hindoostan, in Oude; 18 miles S.E. of Azimgar.—Also, a town in Oude; eight miles S. of Lucknow.—Also, a town in Rohilcund; 42 miles S. of Bereilly.

JELALPOUR, a town of Hindoostan, in Oude; 17 miles N.N.E. of Raat.

JELATGUR, a town of Bengal; eight miles N. of Purneah.

JELAUL, a town of Hindoostan, in Lahore; 13 miles N.W. of Rotas.

JELENGHIAN, a town of Curdistan; 60 miles S.E. of Van.

JELENY, a town of Bohemia; 14 miles S.E. of Konigingratz.

JELGOVAN, a town of Hindoostan, in Bahar; 17 miles N.N.E. of Bahar.

JELINA, a town of Lithuania; 15 miles S.E. of Lida.

JELIOTTE, in *Biography*, a French vocal performer of great talents and public favour at Paris, which continued undiminished to the end of his life.

He was a native of Berne, of a very good family of that province, and not intended for the profession which he embraced, and which, luckily for the public, his early youth made him prefer to that which would have been more agreeable to his parents, and more besitting their rank in life.

No finger was ever gifted with a finer voice, or knew better how to use it, nor was a better musician than Jeliotte. Though he had been dead 25 years when this article was written, (1780,) the charms of his voice, his taste, and his action were not forgotten, nor the transports by which the public expressed their gratitude, whenever he appeared on the stage.

No one was ever so happy in a great number of friends, or ever better deserved them than Jeliotte. His natural wit, ornamented and polished by his knowledge of the world, and his agreeable personal qualities, made him always sought,

for his own sake, as much as for the diversity and charms of his talents. Laborde.

JELLA, in *Geography*, a town of Birmah, on the Ava; 10 miles S. of Lundsey.

JELLALÆAN, or **GELALÆAN** *calendar, epocha, and year.* See **CALENDAR**, **EPOCHA**, and **YEAR**.

JELLANTRA, in *Geography*, a town of Hindoostan, in the circar of Cicacole; 36 miles S.W. of Ganjam.

JELLASORE, a town of Bengal; 80 miles S.S.W. of Calcutta. N. lat. $21^{\circ} 56'$. E. long. $87^{\circ} 16'$.

JELLASSAR, a town of the province of Agra, on the borders of Dooab; 99 miles S.E. of Delhi. N. lat. $27^{\circ} 25'$. E. long. $78^{\circ} 44'$.

JELLING, a town of Denmark, in North Jutland, formerly a city and the residence of kings; 14 miles N. of Colding.

JELLINGHY, a town of Hindoostan, in Bengal, on the right side of the Ganges; 90 miles N. of Calcutta. N. lat. $24^{\circ} 6'$. E. long. $88^{\circ} 48'$.—Also, a river which is a branch of the Ganges, that separates from the main stream near Jellinghy, and after being joined by another branch about 50 miles N. of Calcutta, forms the Hoogly.

JELLOUD, a town of Hindoostan, in Oude; 10 miles S.S.E. of Fyzabad.

JELLOULAH, a town of Africa, in Tunis; 10 miles N.W. of Cairoan.

JELLY, a form of food, or medicine, prepared from the juices of ripe fruits, boiled to a proper consistence with sugar, or of the strong decoctions of the horns, bones, or extremities of animals, boiled to such a height as to be stiff and firm when cold, without the addition of any sugar. See **Harts' HORN**.

The jellies of fruits are cooling, saponaceous, and acescent, and therefore are good as medicines in all disorders of the primæ viæ, arising from calefcent juices, especially when not given alone, but diluted with water. On the contrary, the jellies made from animal substances are all calefcent, and are therefore good in all cases in which an acidity of the humours prevails: the calefcent quality of these is however in a great measure taken off, by the adding lemon juice and sugar to them. There were formerly a sort of jellies much in use, called *compound jellies*; these had the restorative medicinal drugs added to them, but they are now scarcely ever heard of.

The jelly obtained from the various parts of animals contains a mucous substance, very soluble in water, but not in alcohol; and it may be easily obtained by boiling these animal substances in water, and concentrating the decoction, until, by mere cooling, it assumes the form of a solid tremulous mass. The jelly of harts-horn is extracted by a similar operation, and afterwards rendered white with the milk of almonds. This kind of food, duly scented, is served up at our tables by the name of "blanc-mangé." Jellies are in general restorative and nourishing; that of harts-horn is astringent and emollient. Jellies in general have, in their natural state, no smell, and their taste is insipid. By distillation they afford an insipid and inodorous phlegm, which easily putrefies. A stronger heat causes them to swell up, become black, and emit a fœtid odour, accompanied with white acrid fumes. An alkaline phlegm then passes over, succeeded by an empyreumatic oil, and a little carbonate of ammonia. A spongy coal remains, which is with difficulty reduced to ashes, and affords by analysis muriate of soda and phosphate of lime. Water dissolves jellies perfectly; hot water dissolves a large quantity, as they become consistent only by cooling. Acids and alkalies also dissolve them. The nitric acid disengages, as M. Berthollet has

shewn, nitrogen gas. For other properties, see GELATIN.

If jelly be concentrated to such a degree as to give it the form of a cake, it is deprived of the property of putrefying; and thus the dry or portable soups are formed, which may be of the greatest advantage in long voyages. The following is a receipt given by M. Chaptal for preparing these cakes: calves feet, 4; leg of beef, 12lbs.; knuckle of veal, 3lbs.; leg of mutton, 10lbs. Let these be boiled in a sufficient quantity of water, and the scum taken off as usual; after which the soup is to be separated from the meat by straining and pressure. The meat is then to be boiled a second time in other water; and the two decoctions, being added together, must be left to cool, in order that the fat may be exactly separated. The soup must then be clarified with five or six whites of eggs, and a sufficient quantity of common salt be added. The liquor is then strained through flannel, and evaporated in the water, both to the consistence of a very thick paste; after which it is spread rather thin upon a smooth stone, then cut into cakes, and lastly, dried in a stove until it becomes brittle; these cakes are kept in well-closed bottles. The same process may be used to make a portable soup of the flesh of poultry; and aromatic herbs may be used as a seasoning, if thought proper. These tablets or cakes may be kept four or five years. When intended to be used, the quantity of half an ounce is put into a large glass of boiling water, which is to be covered, and set upon hot ashes for a quarter of an hour, or until the whole is entirely dissolved. It forms an excellent soup, and requires no addition but a small quantity of salt. The cakes of "hockiac," which are prepared in China, and are known in France by the name of "colle de peau d'ane," are made with animal substances, they are used in disorders of the lungs, in the dose of from half a dram to two drams.

M. Proust, professor of chemistry at Madrid, has published directions for preparing jelly from bones in a work, entitled "An Inquiry into the Means of Improving the Subsistence of the Soldier." In order to obtain this jelly in an expeditious and cheap manner, he directs that the bones should be reduced into powder; which may be very readily done between a pair of toothed iron cylinders, as in the ammoniac works. The bones thus comminuted, are to be boiled in eight or ten times their weight of water for the space of four hours, or till about half the water is wasted, when the liquor will be found on cooling of a due gelatinous consistence. A vessel with a tight cover should be used, that the water may acquire as much heat as possible; but it should not be of copper, as this metal is easily dissolved by animal mucilage. According to the experiments of M. Proust, 5lbs. of the middle part of the bone of a leg of beef, will afford nine pints of jelly; the same quantity of the bone of the joint, 15 pints; of the ribs and spine, 11 quarts; of the rump and edge bone, 13 quarts. Five pounds of mutton bone of every sort together, give 19 pints of jelly. Pig's bones yield a little more, the flavour of which is the most agreeable. In warm weather the liquor must be boiled down somewhat more, if it be intended to assume the same gelatinous consistence when cold; as the same quantity of bone that would afford a quart of jelly in winter, will not yield above a pint and a half, or a pint and a quarter in summer, but then it contains proportionally more nourishment. If this jelly be boiled till it acquires a consistence a little thicker than a syrup, then poured out into plates, and when cold cut into pieces, and dried on a net, it will keep a long time, and be particularly useful at sea. One ounce of this dry portable jelly being soaked in water

for a quarter of an hour to soften it, and then boiled, will make from a pint and a quarter to a quart of jelly, according to the season, and equally as good as that which is fresh extracted. Mr. P. prepares, as he informs us, a very pleasant restorative for the sick, by $1\frac{1}{2}$ ounce of sugar, and a little salt, to 14 or 15 ounces of the jelly, and then making it into an emulsion with 12 sweet and four bitter almonds, and a little orange peel. We shall here add, that Mr. P. chops the refuse bones, before they are ground for extracting the jelly, into pieces about an inch long with a cleaver, then throws them into a kettle of water, and lets them boil for a quarter of an hour. The fat obtained in this manner from 16lbs. of rump and edge-bones weighed, when cold, two pounds; and from the same quantity of the bones of the joints he obtained four pounds of solid fat. This, he observes, when fresh, may be used for various ordinary purposes; when it has been kept for some time exposed to the air, it becomes very good tallow for making candles.

JELLY, *Flax-seed*. See FLAX-SEED Jelly.

JELLY, *Oat*, a preparation of common oats, recommended by many of the German physicians in all hectic disorders, to be taken with broth of snails or cray-fish.

It is made by boiling a large quantity of oats, with the husk taken off, with some hartshorn shavings and currants together, with a leg of veal cut to pieces, and with the bones all broken; these are to be set over the fire with a large quantity of water, till the whole is reduced to a sort of jelly, which when strained and cold will be very firm and hard. A few spoonfuls of this are to be taken every morning, diluted with a basin of either of the above-mentioned broths, or any other warm liquor. See GELATIN.

JELLY, *Star-wort*. See STAR-WORT Jelly.

JELMO, in *Geography*, a small island in the North sea, near the coast of Lapland. N. lat. $74^{\circ} 8'$.

JELMORE, a town of Hindoostan, in the circar of Cicacole; 15 miles N. of Cicacole.

JELNA, a town of Lithuania, in the palatinate of Wilna; 10 miles S.E. of Lida.

JELOLPOUR, a town of Hindoostan; 22 miles N.N.W. of Benares.

JELONGA, a town of Bengal; 13 miles E. of Doefa.

JELPESH, a town of Bengal; 30 miles W.N.W. of Beyhar.

JELPIGORY, a town of Bengal; 40 miles W. of Beyhar.

JELSO, a town of Norway, in the diocese of Bergen; 22 miles N.N.E. of Stavanger.

JELVADI, a town of Asiatic Turkey, in Natolia; 22 miles E. of Ibarteh.

JEMAMA. See IMAMÉ.

JEMAPETTA, a town of Hindoostan, in Barramaul; 12 miles S.E. of Namacul.

JEMARROW, a kingdom of Africa, on the S. side of the river Gambia; 120 miles from the sea; inhabited by Mahometans.

JEMBA, a river of Russia, which rises in the province of Upha, and runs into the Caspian sea. N. lat. $46^{\circ} 57'$. E. long. $54^{\circ} 39'$.

JEMBUT, in the *Materia Medica*, a name used by Avicenna and others, to express the seeds in the pods of the carob-tree, or siliqua dulcis; which they call charub or charnub, and the Greeks ceratium.

JEMME, EL, in *Geography*, a town of Africa, in the kingdom of Tunis, called also Tifdra or Tifdrus. This town abounds with antiquities, such as altars, statues, and

a spacious amphitheatre, in a decayed and mutilated state; 40 miles S.S.E. of Cairoan.

JEMDAR, a town of Hindoostan, in Bahar; 17 miles E. of Hajypour.

JEMLAH, a town of Thibet, which gives name to a district; 230 miles N. of Fyzabad. N. lat. $30^{\circ} 35'$. E. long. $81^{\circ} 33'$.

JEMMAPE, or GEMAPPE, a department of France, being one of the 13 belonging to the region, called the re-united country; formed of portions of Austrian Hainaut, of Brabant, of Liege, and of Namur; W. of the Sombre and Meuse; in N. lat. $50^{\circ} 30'$. The capital is Mons. It contains, in extent of territory, 3865 kilometres, and in population 412,129 persons. It is divided into three districts, viz. Tournay, Mons, and Charleroy, 32 cantons, and 423 communes. Tournay has 165,988 inhabitants, Mons 138,533, and Charleroy 107,608. The total of contributions is 3,158,038 francs, and for expences, administration, judiciary, and for public instruction, 267,267 fr. 76 cents. This department comprehends a great variety of soil and productions, with mines of iron, coal, quarries of marble, &c.

JEMMINGHEN, or JEMGUM, a town of East Friesland; 8 miles S.E. of Emden.

JEMOO, a river on the N. side of the island of Java, which runs into the sea. S. lat. $6^{\circ} 47'$. E. long. $111^{\circ} 8'$.

JEMRIGAUCHY, a town of Bootan; 15 miles N.E. of Tassafudon. N. lat. 28° . E. long. $89^{\circ} 45'$.

JEMROUD, a town of the kingdom of Candahar; 30 miles W. of Ghizni.

JEMSEG, a town of New Brunswick; 25 miles E.S.E. of Frederick Town. N. lat. $45^{\circ} 55'$. W. long. $66^{\circ} 13'$.

JEMSERUM, a town of Sweden, in the province of Smaland; 45 miles N. of Calmar.

JENA, a town of Germany, in the principality of Eisenach, near the Saale, situated in a pleasant valley among rising hills, which produce great quantities of wine. It is surrounded with walls, ditches, and towers, and it has an university founded in 1548. The town has four fauxbourgs; 10 miles E. of Weimar. N. lat. $50^{\circ} 54'$. E. long. $11^{\circ} 30'$.—Also, a town of South America, in the province of Quito; 12 miles S. of Archidona.

JENET, a town of Africa, in Sahara; 200 miles S.E. of Gadamis. N. lat. $27^{\circ} 50'$. E. long. $13^{\circ} 10'$.

JENGHIJE, a town of the Arabian Irak, on the Tigris; 12 miles N.W. of Bagdad.

JENGHIKAND, a town of Turkestan, on the Sirr; 27 miles W.S.W. of Tonkat.

JENGI, a town of Hindoostan, in the country of Cutch, near the coast; 21 miles S. of Tahej.

JENGOKO, a town of Japan, in the island of Nippon; 50 miles E. of Jedo.

JENHAT, a circar of Hindoostan, in the subah of Lahore, situated between the rivers Behat and Chunaub, about 120 miles long from N. to S. and from 10 to 50 broad: the chief town is Gujurat.

JENJAPOUR, a town of Hindoostan, in Bahar; 20 miles E.N.E. of Durbungah. N. lat. $26^{\circ} 14'$. E. long. $86^{\circ} 28'$.

JENI-BASAR, or NOVI-BASAR, a town of European Turkey, in Bulgaria, on a branch of the river Ibar, containing about 300 houses, occupied by Christians and Turks; anciently the capital of the Rascians; 83 miles N.E. of Ragusa. N. lat. $43^{\circ} 40'$. E. long. $19^{\circ} 59'$.

JENJEREE, a town of Hindoostan, in Bahar; 30 miles N.E. of Monghier.

JENJIAM, a town of Hindoostan, in Moultan; 40 miles W. of Adjodin.

JENIKALE, a town of Russia, in the government of Taurida, in the narrow channel, called the strait of Taman, between the Black sea and the sea of Azoph; 15 miles N.E. of Kerch. N. lat. $45^{\circ} 10'$. E. long. $36^{\circ} 10'$.

JENIKOW, a town of Bohemia, in the circle of Czaflau; 24 miles S.W. of Czaflau.

JENISHEHR, a town of Persia, in the province of Jorjan; 15 miles S.E. of Jorjan.

JENITZA, a town of European Turkey, in Macedonia, seated on a lake that communicates with the gulf of Saloniki by means of a canal about twelve miles long, anciently the capital of Macedonia, but now a heap of ruins; 24 miles W.N.W. of Saloniki. N. lat. $40^{\circ} 48'$. E. long. $22^{\circ} 30'$.

JENKIN, ROBERT, in *Biography*, was born at Minster, in the isle of Thanet, in Kent, in the year 1656. He received his classical education in King's school at Canterbury, whence he was sent to the university of Cambridge when he was about eighteen years of age. In 1680 he was elected fellow of St. John's college, and five years afterwards appointed chaplain to Dr. Lake, upon the translation of that learned prelate from Bristol to the see of Chichester. In 1688 his patron gave him the precentorship of his cathedral church, but upon his refusing to take the oaths at the revolution he was obliged to resign that preferment, and to retire also from his fellowship. Little is known of Mr. Jenkin during the next twenty years, but we find him doctor of divinity and master of his college in the year 1711, and at the same time he was appointed lady Margaret's professor of divinity. On the accession of George I., an act was passed obliging all those who held any post, of 5*l.* per ann., to take the abjuration oath. Dr. Jenkins had, at this period, no hesitation in conforming, but he was so much affected at being obliged to eject many worthy and conscientious men who could not subscribe, that he even fell into a state of childifness. He died in the year 1727. As an author he is known by "An historical Examination of the Authority of General Councils, shewing the false Dealing which hath been used in publishing them;" "The Reasonableness and Certainty of the Christian Religion;" and many controversial pieces, particularly "Remarks on some Books lately published, viz. M. Basnage's History of the Jews: Mr. Whitton's eight Sermons: Mr. Locke's Paraphrase, &c." In another work he accuses M. Le Clerc of treating the fathers, especially St. Augustine, with unjust severity.

JENKIN'S Town, in *Geography*, a settlement on the coast of Africa, in the country of Scherbro. N. lat. 7° . W. long. $11^{\circ} 50'$.

JENKINS, Sir LEOLINE, in *Biography*, a statesman, was born at Llantrifaint, in Glamorganshire, in the year 1623. Having laid a good foundation in grammar-learning at Cowbridge, he went to Oxford, where he remained till after the death of the king in 1648. Upon that event he retired into his native country, and was employed in the tuition of the eldest son of sir John Aubrey, and other young persons of family attached to the episcopal church. At length, falling under some suspicion, he thought it advisable to go abroad. During three years he led his pupils through a course of study and travel upon the continent; when he returned and lived in retirement till the restoration. In 1661 he was chosen principal of Jesus college, a post which he held till 1673. In the mean time he applied himself diligently to the civil law, was admitted an advocate of the court of arches, and rose successively to the offices of judge of the admiralty

and judge of the prerogative court: he was likewise appointed one of the commissioners for recovering the effects of the queen-mother of France, lately dead. For his services on this occasion he had the honour of knighthood conferred upon him. In 1673 he was appointed one of the ambassadors plenipotentiary for concluding the peace of Nimeguen, and on his return to England he was elected representative in parliament for the university of Oxford, where he opposed the bill for the exclusion of the duke of York, soon after he was made secretary of state and a privy counsellor. He died in 1685, and was buried in the chapel of Jesus college, to which he was a great benefactor. His letters and papers were printed in two volumes folio. "He was," according to bishop Burnet, "a man of exemplary life, and considerably learned; but he was dull and slow: he was a great assertor of the divine right of monarchy, and was for carrying the prerogative very high. He neither spoke nor wrote well." He bequeathed the greater part of his property to charitable uses. * Biog. Brit.

JENKINS, JOHN, an English musician of great eminence in the 17th century, was born at Maidstone, in Kent, 1592. He was a voluminous composer of fancies for viols during the reign of Charles I. and the interregnum, which were in great favour throughout the kingdom. Instrumental music was in a very rude state at this time. His first publication, however, was vocal, being a collection of songs under the title of "Theophila, or Love's Sacrifice," folio, 1651. None of the infinite number of pieces that he composed for viols, which occur in all the manuscript collections of the times, were printed; yet, in 1660, he published twelve sonatas for two violins and a base, with a thorough-base for the organ or theorbo, which were re-printed in Holland, 1664. These were professedly in imitation of the Italian style, and the first of the kind which had ever been produced by an Englishman. It was at this time an instance of great condescension for a musician of character to write expressly for so ribald and vulgar an instrument, as the violin was accounted by the lovers of lutes, guitars, and all the fretful tribe.

In manuscript memoirs of music, written by the honourable Roger North, of Rougham, in Norfolk, brother of the lord keeper North, to which we were allowed access by his descendant, the late Rev. Dr. Montague North, canon of Windsor, there is a very diffusive account of Jenkins, the circumstances of whose life have suggested to the author many moral reflections on the instability of musical renown. "It is of small importance," says he, "to the state of the world, or condition of human life, to know the names and styles of those composers of our own country who have excelled the Italians themselves in every species of music, but that for the voice; therefore the oblivion of all such things is no great loss. But for curiosity sake, as other no less idle antiquities are courted, it would doubtless afford satisfaction to professors and lovers of the art, if they could acquire true information concerning their names, characters, and works: of the latter, much knowledge might be obtained, if the old collections, not yet rotten, of many patrons of music were accessible. In these we might still find the productions of Alphonso, Ferabosco, Coperario, Lupo, Mico, Este, and divers others, especially of John Jenkins, whose musical works are more voluminous, and, in their time, were more esteemed than all the rest, though they now (1728) lie in the utmost contempt.

"I shall endeavour to give a short account of this master, with whom it was my good chance to have had an intimate acquaintance and friendship. He lived in king James's time,

and flourished in that of king Charles I. His talents lay chiefly in the use of the lute and base, or rather lyra-viol. He was one of the court musicians, and was once brought to play upon the lyra-viol before king Charles I. as an extraordinary performer. And when he had done, the king said he did wonders upon an inconsiderable instrument. The lyra-viol was a viol da gamba, with more strings, but differently tuned from the common six-string base. Its notation, like that of the lute, was written in entablature. He left London during the rebellion, and passed his time at musical gentlemen's houses in the country, where he was always courted, and at home, wherever he went; and in most of his friends houses there was a chamber called by his name. For, besides his musical excellencies, he was an accomplished and ingenious person, and of such inoffensive and amiable manners, that he was esteemed and respected for his virtues and disposition, long after age had deprived him of his musical powers.

"It is not possible to give an account of his compositions, they were so numerous, that he himself outlived the knowledge of them. A Spanish nobleman sent some papers to sir Peter Lely, containing fragments of a consort (concerto), in four parts, of a sprightly kind, such as were then called *fancies*, desiring that he would procure for him the rest, *coûte qui coûte*. Lely gave me these papers, as the likeliest person to get them perfected. I shewed them to Jenkins, who said he knew the consort to be his own; but when or where composed he knew not, and was unable to recollect any more about it.

"His fancies were full of airy points, grave and triple movements, and other variety. And all that he produced till his declining age, was lively, active, decided, and fanciful. And of this kind he composed so much, that the private (or chamber) music, in England, was in a great measure supplied by him; and they were the more coveted, because his style was new, and, for the time, difficult: for he could hardly forbear divisions, and some of his consorts were too full of them. But it must be owned, that being an accomplished master on the viol, all his movements laid fair for the hand, and were not so hard as they seemed.

"His vein was less happy in vocal music, though he was fond of setting words, and occasionally of teaching to sing; but he had neither voice nor manner fit for it. In his sprightly moments he made catches, [nothing of this kind now remains of Jenkins, but his little round: "A boat, a boat, haste to the ferry," which is a happy selection and combination of pleasing sounds,] and strains that we called rants, with a piece called "The Cries of Newgate," which was all humour and very whimsical. But of all his concerts, none flew about with his name so universally as the small piece called his "Bells," or "The Five Bell Conforte." In those days the country fiddlers were not so well supplied with light music from London, as since; and a master that furnished them with new tunes, that they were able to play, was a benefactor."

Jenkins lived to the great age of eighty-six, eighteen years after the restoration. And Mr. North, the author of these memoirs, who was born in 1650, lived till 1733.

JENKINS'S *Bay*, in *Geography*, a bay on the back part of the island of St. Eustatius.

JENKINS'S *Island*, a small island near the coast of South Carolina. N. lat. 32° 20'. W. long. 80° 40'.

JENKING, in *Mining*, is applied, in some districts, to the last operations in a coal-pit, or some part of the same, which is about to be abandoned: that of perforating, or robbing

robbing of the pillars or ribs of coal which have been left to support the roof.

JENKYNs, DAVID, in *Biography*, an intrepid judge, was born at Pendoylen, in Glamorganshire, and admitted a commoner of Edmond-hall, Oxford, in 1597. From thence he removed to Gray's-inn, and became an eminent counsellor. By king Charles I. he was appointed a Welch judge, and in 1645 he was taken prisoner at Hereford for his activity in the royal cause, and sent to the Tower. Being brought to the bar of the house of commons he denied the authority of the house, and refused to kneel, for which he was fined 1000*l.* and remanded to prison. In 1650 an act was passed for his trial, but it never took place. He expected to be hanged, and declared that he would die with the bible under one arm, and magna charta under the other. In 1656 he obtained his liberty, and died in 1663. His tracts on legal and political subjects were printed in 1681, in one vol. 12mo.

JENNE', in *Geography*, a town of Africa, in Bambarra, situated on an island in the river Niger or Joliba, at the distance of two days' journey from the lake Dibble in the same river; about 150 miles N.E. of Sego, and about 165 miles S.W. from Tombuctoo. N. lat. 15° 13'. W. long. 0° 40'. Although the town of Jenné is nominally a part of the king of Bambarra's dominions, it is in fact a city of the Moors; the chief part of the inhabitants consisting of Baskreens, or Mahometans, and even the governor himself being of the same sect.

JENNE', a town of Japan, on the N. coast of Nippon; 8 miles N.W. of Kanazava.

JENNET, in *Horsemanship*. See **HORSE**.

JENNIDAH, in *Geography*, a town of Bengal; 14 miles N.W. of Mahmudpour.

JENNINGS, DAVID, in *Biography*, son of an ejected minister, was born at Kibworth, in Leicestershire, in the year 1691. He obtained a good stock of grammar learning at the free-school of his native place, and about the year 1709 he was sent to pursue a course of academical studies in London, under the care of Dr. Chauncey. Having finished his studies he was appointed one of the preachers at an evening lecture at Rotherhithe, and in 1716 chosen assistant preacher at the meeting near Haberdashers-hall. Two years afterwards he was elected pastor to the congregational church in Old Gravel-Lane, Wapping, with which he maintained that relation during forty-four years. Within a year after he entered this charge, he shewed his respect and attachment to the rights of conscience, by refusing to comply with the requisition brought forwards by many of the brethren at Salters-hall, to sign certain articles relating to the Trinity. Mr. Jennings, about the year 1730, published a small volume of sermons addressed to the young, entitled "The Beauty and Benefit of early Piety," which was followed by other publications of a practical nature. In the year 1740 he entered the lists against Dr. John Taylor, concerning Original Sin. He justified the doctrine, and did not act as the fair and liberal antagonist; but notwithstanding their difference in doctrinal points, they were in habits of intimacy and friendship with each other as gentlemen. In the year 1743 Mr. Jennings was elected trustee of Mr. Coward's charities, and one of the lecturers at St. Helen's; and in the following year he became divinity tutor, in the room of Mr. Eames, at the academy, at that time chiefly supported by Mr. Coward's funds. In this work he was earnestly intent: nothing ever diverted him from a daily attendance in the lecture room; and he was indefatigable in the discharge of the duties belonging to his office. The habits of early rising, of order in the arrangement of

business, and of punctuality in his engagements, enabled him to perform more than most men would have been able to get through. As a relief to the studies of the mind he employed himself in the common mechanical arts of life. His method of communicating instruction was easy and familiar, and his general deportment towards his pupils affable and friendly. In some instances he was betrayed into acts of illiberality, which ill accorded with that spirit which in younger life led him to resist the imposition of a formula of faith, devised by the ministers at Salters-hall. He was determined to maintain, in his academy, the reputation for orthodoxy which it had acquired, and would not suffer young men to deviate from his standard of faith. In some cases he had recourse to expulsion, although the characters of the pupils thus treated were most blameless and exemplary. In the year 1747 Mr. Jennings published "An Introduction to the Use of the Globes," &c. which maintained a considerable degree of popularity for more than half a century. In 1749 the university of St. Andrew's in Scotland conferred on the author the degree of doctor of divinity. After this, he published "An Appeal to Reason and Common Sense for the Truth of the Holy Scriptures." He died in September 1762, when he was seventy-one years of age. He was highly valued by his acquaintance, and he had the honour to educate many pupils who proved ornaments to the dissenting interest, and have rendered eminent service to science and the world, some of whom still sustain, by a diligent application of great talents, a respectable and commanding rank in life. After his death, was printed, from a MS. copy, "An Introduction to the Knowledge of Medals," consisting of a course of lectures on the history, the nature, size and shape;—the orders into which they are to be distinguished;—the impression and form, and value and use of medals. In 1766 a more elaborate work was published by Dr. Furneaux from the MSS. of Dr. Jennings, entitled "Jewish Antiquities: or a Course of Lectures on the Three First Books of Godwin's Moses and Aaron: to which is annexed a Dissertation on the Hebrew Language:" in two vols. 8vo. This is a work of great merit, and deserves the perusal of all who would obtain an intimate acquaintance with the scriptures, particularly of the Old Testament. A new edition of the "Jewish Antiquities" was published about three years since, it having been long out of print, and very much called for.

JENNINGS'S Island, in *Geography*, a small island in the gulf of Florida, near the coast of East Florida. N. lat. 25° 28'. W. long. 80° 28'.

JENNY WREN. See **WREN**.

JENOYPOUR, in *Geography*, a town of Hindoostan, in Allahabad; 24 miles N. of Gazypour.

JENSON, or JANSON, NICHOLAS, in *Biography*, an eminent printer of the 15th century, was brought up to the art of engraving. He was taken away from his employment by Lewis XI., and sent to Mentz to endeavour to bring away the secret of the new discovery of typography. By another account it should seem that he was sent on this mission by Charles VII. in 1458, and it says, that Jenfon, on his return, finding that the king was dead, went and settled elsewhere. He exercised his profession at Venice, in which he acquired a high degree of reputation in the three branches of cutting punches, founding types, and printing. He formed the present Roman character, the neatness of his types command admiration even in the modern improved state of the art, and his editions are in great request with the curious. The first work which issued from Jenfon's press is one entitled "Decor Puel-larum," in 1471. Several editions of Latin books followed,

of which the one of the latest date is 1481, thought to be the last year of his life.

JENTLING, in *Ichthyology*, the name of a river fish caught in the Danube, and molt of the great rivers in Germany, and called by the Germans *sehead*, *scheat*, *jent*, and *koppen*; and by Gesner *capito caruleus*, the blue chub. See *CYPRINUS JEFES*.

JENUCHSHADEGA, in *Geography*, an Indian village in Pennsylvania, on the W. bank of Alleghany river; 14 miles S. E. from the outlet of Chataugque lake.

JENYNS, SOAME, in *Biography*, the only son of sir Roger Jenyns, of Bottisham-hall, Cambridgeshire, was born in London in 1704. He was educated under his father's roof till he was seventeen years of age, when he was entered a fellow-commoner of St. John's college, Cambridge. He was diligent in his studies, and spent three years at the university, after which he entered upon a course of life well adapted to a man of independent fortune. In his first marriage he was not fortunate, a separation took place, which the lady did not long survive: but his second wife outlived him. In younger life he sustained the character of a beau, and his polite attention to the ladies was displayed in his first performance, as an author, which was a poem on "The Art of Dancing," published in 1728, and dedicated to lady Fanny Fielding. From this period he continued to make himself known occasionally by pieces in verse, which were sufficiently numerous to be collected into a volume in 1752. At the death of his father his fortune enabled him to become a representative in parliament for the county of Cambridge. He began his senatorial career by supporting sir Robert Walpole, probably on account of his attachment to the Whig interest, and he continued ever afterwards the habitual adherent to the minister for the time being. This pliant conduct was rewarded by the place of one of the lords of the Board of Trade, which he held from 1755, through every change, till the Board itself was abolished, as an useless appendage to government, in the year 1780. He was ever inclined to moderate measures, and was in his own mind against the coercion made use of with regard to the Americans; he wrote in defence of dean Tucker's scheme of leaving the colonists to themselves, with the expectation, that when tired of freedom, they would gladly resume their dependence on the mother country. As an author, Mr. Jenyns attained a considerable share of celebrity. His poems consist of a variety of miscellaneous pieces; but his prose works are, in point of style, of a superior degree of excellence: his language is pure and perspicuous, and at the same time animated with wit and embellished with eloquence. He was a contributor to the periodical publication entitled "The World," and his papers, five in number, are distinguished by humour and vivacity. In 1757 he published a "Free Enquiry into the Origin of Evil, in six Letters." To account for the existence of evil under the government of an infinitely wise and good Being, he thought that to produce good exclusive of evil is one of those impossibilities which even divine power cannot accomplish. This related to natural or physical evil: with respect to moral evil, his theory was, that it is permitted in order to provide objects for the just infliction of those natural evils which were unavoidable. His work produced many able replies, besides a very severe and masterly critique from the pen of Dr. Johnson, which appeared in the *Literary Magazine*, and which Jenyns never forgot nor forgave. In 1756 he published a pamphlet in favour of a "National Militia," and in 1767 another, entitled "Thoughts on the Causes and Consequences of the High Price of Provisions," &c. which proves that he paid much attention to

political economy. In 1776 he resumed his theological discussions by a work which was much read, viz. "A View of the Internal Evidence of the Christian Religion." The foundation of his reasoning in this piece is, that this religion contains a system of ethics not only superior to, but unlike every thing which had before entered into the mind of man, and therefore that it must have had a divine origin. He contends that it not only carries moral purity to a degree beyond what was ever inculcated by any sect of philosophers, but that it wholly omits or disparages many virtues on which they lay a great stress; as valour, patriotism, and friendship. He contends that it must be of divine origin because no man could have imagined or proposed such a system. This kind of defence of the truth of our holy religion led to the suspicion that he was, under the mask of friendship, undermining its foundation, and he met with some severe strictures from several friends of rational religion, who were unwilling to abandon reason in their regard for Christianity. Upon, however, a fair and candid view of the subject, Mr. Jenyns was probably a very sincere Christian; the whole of his life and conversation bore witness to the sincerity of his views. In 1782 he published "Disquisitions on various Subjects;" in these he argues for the pre-existent state of mankind for the purpose of accounting for the miseries to which they are exposed in this world: and with regard to Christianity he says that its doctrines are "so adverse to all the principles of human reason, that, if brought before her tribunal, it must evidently be condemned;" but the chief force of his wit and argument is directed against the principles of civil liberty, towards which he shews the most determined hostility. He died at the advanced age of eighty-three, in December 1787. As a country gentleman he maintained a very respectable character: he was upright in his conduct, and exemplary in the performance of religious duties. With the liveliness of a man of wit he joined the urbanity of a polite well-bred gentleman, and his social intercourse is represented as highly engaging and delightful. His works have been collected in 4 vols. 12mo., to which is prefixed an account of his life.

JEOFAILE, or JEOFAYLE, in *Law*, a compound of three French words *je ay faille, I have failed*. It is used in a legal sense, when the parties to any suit have, in pleading, proceeded so far, that they have joined issue, which shall be tried, or is tried by a jury, and this pleading or issue is badly joined, so that it will be error if they proceed.

In this case, one of the parties might, by their counsel, shew it to the court, as well after verdict given, as before the jury was charged, by saying, *This inquest you ought not to take; or, To judgment you ought not to go.*

But this occasioning great delays in suits, for the redress thereof several statutes were made; viz. 32 Hen. VIII. cap. 30. by which it was enacted, "That if the jury have once passed upon the issue, though afterwards there be found a jeofaile in the pleading, yet shall judgment be given according to the verdict of the jury." Other statutes have also been made relating to the same thing, in the time of queen Elizabeth and king James I.

The 18th Eliz. cap. 14. ordains, that after verdict given in any court of record, there shall be no stay of judgment, or reversal, for want of form in a writ, count, &c. or for want of any writ original or judicial; or by reason of insufficient returns of sheriffs, &c. But this is not to extend to appeals of felony, indictments, &c. By 21 Jac. I. cap. 13; if a verdict shall be given in any court of record, the judgment shall not be stayed or reversed for variance in form between

between the original writ or bill, and the declaration; &c. or for want of averment of the party's being living; or because the *venire facias* is in part misawarded; for misnomer of jurors; want of return of writs, or because the return officer's name is not set to the return, &c. The stat. 16 & 17 Car. II. cap. 8. enacts that judgment shall not be stayed or reversed after verdict in the courts of record at Westminster, &c. for default in form; or because there are not pledges to prosecute upon the return of the original writ, or because the name of the sheriff is not returned upon it, for default of alleging the bringing into court of any bond, &c. or for the omission of *vi et armis*, or *contra pacem*; mistaking the Christian name or surname of either party, or the sum of money, day, month, or year, &c. in any declaration or pleading, being rightly named in any record, &c. preceding, &c. &c. But all such defects as are not against the right of the matter of the suit, or whereby the issue or trial are altered, shall be amended by the judges, though not in suits of appeal, of felony, indictments, informations on penal statutes, which are excepted out of the act. The 22 & 23 Car. II. cap. 4. made this act perpetual. By 4 & 5 Ann. cap. 16. all the statutes of jeofails shall extend to judgments, entered by confession, *nil dicit*, or *non sum informatus*, in any court of record; and no such judgment shall be reversed, nor any judgment or writ of inquiry of damages thereon shall be stayed, for any defect which would have been added by those statutes, if a verdict had been given; so as there had been an original writ filed, &c. The 5 Geo. I. cap. 13. ordains, that, after verdict given, judgment shall not be stayed or reversed for defect in form or substance, in any bill or writ, or for variance therein, from the declaration, or any other proceeding.

JEOGERY, in *Geography*, a town of Africa, in the kingdom of Jagra. N. lat. 13° 12'. W. long. 14° 57'.

JE OUASËT, a town of the Arabian Irak, on the Tigris; 110 miles N.W. of Bassora.

JEPHTHAH, in *Scripture History*, one of the judges of Israel, was a son of Gilead by one of his concubines, (Judg. xi. 1, 2.) who, upon his father's marriage, was expelled by the family from their house; and who, retiring into the land of Tob, became captain of a band of rovers. The Israelites, who inhabited beyond Jordan, being pressed by the Ammonites, applied to Jephthah for assistance, and offered to place themselves under his command; accordingly he consented to succour them on condition that at the end of the war they would acknowledge him for their prince. A.M. 2817. B.C. 1187. Jephthah, having been invested with the chief command, remonstrated with the king of the Ammonites on the injustice of the war in which he was engaged, and obtaining no satisfactory reply, he levied a powerful army, and marched against him to battle. But before he engaged, he made a vow, that he would sacrifice, or consecrate to him, the first living creature that should come out of his house to meet him on his return. The contest was soon decided by a complete victory; and the conqueror, as he approached his house at Mizpeh, perceived his daughter, an only child, advancing to congratulate him on his success, with music and dancing; and other tokens of filial affection. Recollecting his vow, the interview occasioned the most poignant distress; but when he communicated it to his daughter, she received the intelligence with a firm and submissive mind; and determining to acquiesce in the accomplishment of her father's vow, she merely requested a delay of two months, that she might retire with her companions to lament her infelicity in being devoted to a life of celibacy. At the expiration of the stipulated interval, she returned to her father, "who did with her according to the vow which he had vowed." As to the ob-

ject of this vow, and the manner in which it was fulfilled, Jewish and Christian writers, both ancient and modern, have entertained very different sentiments. It has been a very generally received opinion, that Jephthah offered his daughter as a burnt sacrifice; and in favour of this notion it has been alleged, that it is most agreeable to the natural construction of the Hebrew text; that there is no rule, or precedent in scripture, to justify the practice of devoting persons to perpetual virginity, and that this would have been as contrary to the law of God as if he had sacrificed her; that when Jephthah made this vow, he could have expected no person to come out of his door to meet him, but a human person; that if he had intended no more than the sacrifice of a bullock, or a ram, there was no occasion for such a solemn vow, or if he had meant a brutal sacrifice, he would have vowed the offering of hecatombs rather than of a single animal, on an occasion which he thought so important and interesting; and, moreover, that it was a "custom in Israel, that the daughters of Israel went yearly to lament the daughter of Jephthah," (Judg. xi. 39, 40.) and this custom, it is said, seems to have been intended for an annual rite *in perpetuum*, and not that they went yearly to talk with her, as long as she lived. On the other hand, it has been maintained by writers of great celebrity, that Jephthah, a judge of the Hebrew people, who were mere worshippers of the true God, whose law did not admit of human sacrifices, who had often declared his abhorrence of such abominations, and who had on this account rejected the Canaanites, could not have been guilty of this grossest act of heathen superstition; more especially as his name is connected with other ancient worthies, who in the epistle to the Hebrews (xi. 32.) are enumerated as illustrious instances of the power of faith. Accordingly they have argued that Jephthah devoted his daughter to perpetual virginity, for the honour, and in the service, of God. They allege, that she desired time, before the vow was accomplished, to bewail her virginity, and not the loss of her life, (Judg. xi. 37.) The object of the vow was, therefore, perpetual virginity, and not death; and Jephthah would naturally be troubled, when his daughter met him (v. 35.) because she was his only child (v. 34.), and the accomplishment of his vow, in the milder sense of it, would render his family extinct in Israel, and he would thus exclude himself from the prospect of having the Messiah among his descendants. In favour of the milder interpretation of this vow it is further pleaded, that the words *ליתנות לבתי-פתח* (Judg. xi. 40.) which we render "to lament the daughter of Jephthah," should be rendered "to talk with the daughter of Jephthah," that is, to visit and comfort her in her recluse life: the word *תנה* being justly rendered (Judg. v. 11.) to rehearse. It is further said, that in the words *והיה ליהוה והעליתיה עולה* that occur in Jephthah's vow (Judg. xi. 31.), the *ו* (vau) should be understood not copulatively, but disjunctively; and then the meaning would be, "whatsoever cometh to meet me, shall either be the Lord's, or I will offer it up for a burnt offering;" that is, in case it should be a creature fit for sacrifice. Others have thought it necessary to vindicate Jephthah's character from the blemish of murder; they have also pleaded, that he is not censured in any part of sacred history for this act; that God would not have given victory and success to Jephthah in his expedition against the Ammonites, upon his obliging himself under a solemn vow to offer a human sacrifice; and that he is mentioned, as we have already said, in the catalogue of believers in the epistle to the Hebrews. Although we can lay no great stress on some of the arguments that are alleged in vindication of Jephthah's character, and we cannot help considering his vow as rash and unguarded; we must incline to the more favourable

favourable opinion. It is not improbable, that Homer grounded his fable of Agamemnon's sacrificing his daughter Iphigenia on some tradition of Jephthah's sacrifice; and it is urged, that the name of Iphigenia seems to be a corruption of Jephthigenia, the daughter of Jephthah. Ovid, who has dressed up the story in his way, makes Diana put a stag in her room; and seems, therefore, to have blended the tradition of Abraham's sacrifice with that of Jephthah.

Soon after Jephthah was exalted to that dignified station, which was the recompence of his valour, the Ephraimites, envious of that glory in which they had not been allowed to participate, combined against him; but the contest was soon determined by their entire defeat. The Gileadites, whom he had commanded, seized the fords of the river Jordan, and put to death all those fugitives who endeavoured to escape into their own country; and in order to distinguish Ephraimites from other Israelites, who had occasion to cross the river, he ordered them to pronounce the word "Shibboleth," signifying an ear of corn, and which was pronounced "Sibboleth" by those of that tribe. As many, therefore, as were detected by this test were killed without mercy. The number of the Ephraimites that fell on this occasion amounted to 42,000. After this event we know nothing more of Jephthah, excepting that he judged Israel, or the two tribes and a half beyond Jordan, six years, and then died about the year 1182 B.C. Judges, xi. xii. Calmet's Hist. Bible. Capelli Diatrib. de voto Jephth. Apud Criticos Sacros in Jud. xi. Hallet's note on Heb. xi. 32. Jenning's Jewish. Ant. vol. i. b. 1. c. 1.

JERAAN, in *Geography*, a town of Persia, in the province of Segeltan; 90 miles W. of Zareng.

JERABEES, a town of Syria, on the right bank of the Euphrates, anciently "Gerrhæ;" 14 miles S. of Beer.

JERAGHI, a town of Bengal; 10 miles N. of Burwah.

JERBAH, a town of Bengal; 13 miles N.W. of Ramgur.

JERBOA, in *Zoology*. See *DIPUS Sagitta* and *Jaculus*.

JERBOSAJA, in *Geography*, a town of Africa, in the country of Quoja.

JEREJA, a town of Africa, in the kingdom of Fonia.

JEREMIAH, in *Scripture History*, a canonical book of the Old Testament. The divine writer was of the race of the ten priests: the son of Hilkiah of Anathoth in the tribe of Benjamin. He was called when very young to the prophetic office, about the thirteenth of Josiah, or 628 B.C.; and continued in the discharge of it above forty-one years. Jeremiah's life was often exposed to danger, and he was committed to prison, on account of his remonstrances against the kings of Judah, and the predictions, delivered by him, which announced the calamities that awaited them; particularly under the reign of Jehoiakim and of Zedekiah. After the conquest of Jerusalem by Nebuchadnezzar, he was set at liberty by order of the king, and it was left to his option either to accompany Nebuzaradan, the general of Nebuchadnezzar, to Babylon, or to remain in Judea with Gedaliah, who was appointed governor of the miserable remnant of the people that was left in that country. Jeremiah preferred the latter alternative, and went to reside with Gedaliah at Mizpeh. After the assassination of Gedaliah, Jeremiah, accompanied by Baruch, removed to Egypt. Of the subsequent events of his life, we have no authentic account. He is said by St. Jerom, &c. to have been stoned to death by the Jews at Tahpanhes, where he resided, for

preaching against their idolatry; but it is most likely that he died in Egypt, much advanced in years, and broken by the calamities which happened to himself and his country. Some rabbis, however, assert, that he returned to Judea, and others say that he went to Babylon, and died there.

There were several collections of Jeremiah's prophecies; one made by God's command in the fourth year of Jehoiakim, chap. xxxvi. 2. This contained all the prophecies he had published to that time, as well against the other nations as against the Jews. The former of these in our present collection are put by themselves at the end of the book, from chap. xlv. to the end of the last. But in the present copies of the Septuagint they follow immediately after the thirteenth verse of the twenty-fifth chapter. Another collection of these prophecies, mentioned chap. i. 3. comprehends all those which Jeremiah had uttered to the time of the captivity, and were probably collected by Baruch, his amanuensis, and are put together without any regard to the order of time. To this was added another collection of prophecies, published about the time of his going down into Egypt, contained in chap. xlii. xliii. xlv. at the end of which Ezra, or some others, after the captivity, added those prophecies which Jeremiah delivered against the Gentiles. The fifty-second chapter was probably added by Ezra, and is chiefly taken out of the latter part of the second book of Kings, with additions, which Ezra might supply out of the public records. The book of Jeremiah is altogether written in Hebrew, except the eleventh verse of the tenth chapter, which is Chaldee.

It has been observed, that there is great confusion in the arrangement of Jeremiah's prophecies. A late excellent commentator, Mr. Blaney, has endeavoured, with great judgment, to restore their proper order, by a transposition of the chapters, wherever it appeared to be necessary. The first twelve chapters seem to contain all the prophecies that were delivered in the reign of Josiah. Soon after the accession of Jehoiakim to the throne, upon the deposition of Jehoahaz, Jeremiah was commissioned to denounce the divine judgments against him and the people, unless they repented of their wickedness. He thus provoked their indignation; and they accused him as a person whose sedition deserved death. He was acquitted, however, by the nobles, and by a powerful influence preserved from the king's vengeance. About four years afterwards he predicted the destruction of Jerusalem and of the temple, and the Babylonish captivity, which he foretold would last 70 years. For this prophecy he was sent to prison, and he narrowly escaped with his life. His prophecies under this reign are continued from the 13th to the 20th chapter inclusively; to which we must add the 22d, 23d, 25th, 26th, 35th and 36th chapters, together with the 45th, 46th, 47th, and probably the 48th, as far as the 34th verse of the 49th chapter. Under the reign of Zedekiah, the last king of Judah, Jeremiah was frequently deputed to the exercise of his prophetic office. His predictions in this reign were contained in the 21st and 24th chapters, the 27th to the 34th, and the 37th to the 39th inclusively, together with the last six verses of the 49th chapter, and the 50th and 51st chapters concerning the fall of Babylon. It does not appear at what period of Jeremiah's life he delivered the prophecy concerning the future restoration of Israel to their own land, and the re-establishment of their civil and religious constitution under the Messiah, comprized in the 30th and 31st chapters.

St. Jerom has observed upon this prophet, that his style is more easy than that of Isaiah and Hosea; that he retains something of the rusticity of the village where he was born; but that he is very learned and majestic, and equal

equal to those two prophets in the sense of his prophecy.

We shall close this article with an extract from the admirable lectures of bishop Lowth (see lect. xxi.) relating to the character of Jeremiah as a writer. "Isaiah," he says, "Jeremiah, and Ezekiel, as far as relates to style, may be said to hold the same rank among the Hebrews, as Homer, Simonides, and Æschylus, among the Greeks." "Jeremiah, though deficient neither in elegance nor sublimity, must give place in both to Isaiah. Jerom seems to object against him a sort of rusticity of language, no vestige of which, I must however confess, I have been able to discover. His sentiments, it is true, are not always the most elevated, nor are his periods always neat and compact; but these are faults common to those writers, whose principal aim is to excite the gentler affections, and to call forth the tear of sympathy or sorrow: This observation is very strongly exemplified in the *Lamentations* (see that article), where these are the prevailing passions; it is however frequently instanced in the prophecies of this author, and most of all in the beginning of the book (ch. ix. xiv. 17, &c. xx. 14—18.) which is chiefly poetical. The middle of it is almost entirely historical. The latter part, again, consisting of the six last chapters, is altogether poetical (ch. xlvi—li. to v. 59.); it contains several different predictions, which are distinctly marked, and in these the prophet approaches very near the sublimity of Isaiah. On the whole, however, I can scarcely pronounce above half the book of Jeremiah to be poetical."

The version of Mr. Blaney, published in 1784, and accompanied with numerous and valuable notes, is deemed to be the best extant; the author having availed himself of the assistance afforded by Dr. Kennicott's collection, and other sources of information, domestic and foreign. Blaney's notes. Lowth de Sacra Poesi Præl. lect. xxi. Dupin. Lowth's Paraph. Gen. Biog.

JEREMIAH, in *Geography*, a town of Palestine, anciently called *Anathoth*, the birth-place of the prophet Jeremiah; 6 miles E. of Jerusalem.

JEREMIE, CAPE, a cape on the S. coast of the island of Hispaniola. N. lat. 18° 16'. W. long. 17° 15'.

JEREMIE, a jurisdiction, town, and cape, within the bay of Leogane, on the southern peninsula of the island of St. Domingo. The jurisdiction contains two parishes, and its soil is excellently adapted for the culture of coffee. The town is seated on the W. side of the bay; and point Jeremie lies in N. lat. 18° 42' 30". W. long. from Paris 76° 32'.

JEREMYSQUAM, an island of America, in Lincoln county and state of Maine, which, with Folly island, forms the mouth of Sheepscot river, in Wiscasset bay.

JERF, a town of Norwegian Lapland; 100 miles W.S.W. of Wardhuys.

JERFALCON, the English name of the gyrfalcon, a very fierce, bold, and large bird, the largest of all the falcon kind. See **GYRFALCON**.

JERGUER, in the *Custom House*, one who oversees the accounts and conduct of the waiters.

JERICOH, in *Ancient Geography*, a considerable city of Palestine, in the tribe of Benjamin, about six miles W. from Jordan, and 22 almost E. from Jerusalem. It was situated in a spacious plain, producing all sorts of fruits, especially palm-trees, whence it was called "the city of palm-trees." Jericho was the first city in Canaan taken by Joshua. (Josh. ii. 1, 2, &c.) in the year 1469 B.C., and burnt by special order. About 537 years afterwards, Hiel of Bethel undertook to rebuild it (1 Kings, xvi. 34.); and on this occasion

lost his two sons. But before this period there was a city of Jericho in the vicinity of the original place of the same name. The Jericho of Hiel acquired its original splendour and population: it was adorned with a magnificent palace and other edifices by Herod, and it gained reputation from having been the place where Jesus Christ performed many miracles. Its importance and splendour remained for many ages, till at length it was sacked by Vespasian. Adrian re-established it A.D. 138, and after subsequent disasters, it was repaired by the Christians, and made the seat of a bishop; but in the 12th century it was finally destroyed by the infidels. This famous city, the walls of which were 20 stadia, or 2½ miles in circumference, is now reduced to a poor village, called "Raha," on a plain six or seven leagues long, by three wide, round which are several barren mountains, that render it extremely hot. Instead of the balm of Mecca, which it formerly produced, there is another species, resembling a plum-tree, called "Zakkoun," which yields a sweet oil, celebrated for healing wounds. This is now the sole commerce of Raha.

JERICOH, a town of the duchy of Magdeburg, seated on the Elbe; 32 miles N.N.E. of Magdeburg. N. lat. 52° 30'. E. long. 12° 5'.—Also, the circle of the same duchy, which includes the town, also Burg and Sandau, and a few villages.

JERICOH, *Rose of*, in *Botany*. See **ANASTATICA**.

JERICO, in *Geography*, a post-town in Chittenden county, Vermont, S.E. of Essex, and N.E. of Williston, separated from the latter by Onion river, and containing 728 inhabitants.—Also, a post-town of New York, in Chenango county, on the E. branch of the Susquehanna, containing 939 inhabitants.

JERJERIAIA, a town of the Arabian Iraqs, on the Tigris; 36 miles S.E. of Al-Modain.

JERIM, a small town of Arabia, in the province of Yemen, the seat of a Dola, who resides in a castle situated on a rock. The houses are built of stone, and of bricks which had been dried in the sun. After a dry season, locusts are very numerous in a plain near this town; they are then gathered and dried for winter provisions at Jerim, as well as in other places of Arabia. The market is a place of amusement. Tailors, shoemakers, blacksmiths and other artificers sat along the streets, behind low walls, and wrought at their trades in the open air. Surgeons were seen drawing blood with a common knife, and dressing the wound with pieces of hartshorn, cut off at the root of the horn. The number of houses in this place is about 2000; 80 miles N.E. of Mocha. N. lat. 14° 17'. E. long. 44° 22'.

JERKIN, a name given by some to the male of the jer-falcon. See **GYRFALCON**.

JERKITYYA, in *Geography*, a town of Hindoostan, in Bahar; 22 miles S.E. of Bettiah.

JERMAH, or **GERMAH**, a town of Africa, in Fezzan, supposed to be built on the site of Garama, the capital of the country of the Garamantes; situated S. of Zuçela, and nearly at the same distance from Mourzouk. It is distinguished, like Zuçela, by numerous herds, especially of sheep and goats, that are observed around it; by the various and abundant produce of its fields; and by numerous and majestic ruins that indicate its former splendour; though at present the houses are cottages built of clay; 60 miles S.E. of Mourzouk.

JERMOLI, in *Biography*, the principal tenor singer in the comic opera, succeeded Trebbi in 1777, when the Todi was the first Buffa. Neither his voice, action, or

style of singing, were of the first class, or above mediocrity; and when Lovattini quitted this country, he left a blank in the comic opera, which has never since been filled up to our satisfaction.

JERMUK, in *Geography*, a river of Syria, anciently "Hieromax," which runs into the lake of Tiberias, near its southern extremity.

JEROM, or **JEROME**, *St.*, **EUSEBIUS HIERONYMUS**, in *Biography*, an eminent father of the Christian church, was born of Christian parents at Stridon, on the confines of Dalmatia and Pannonia, probably about the year 342; though others date his birth in 329, 330, or 331; and as he died in the year 420, they say that he was about 90 years of age when he died. Several circumstances corroborate the former statement, assigned by Lardner as the era of his birth. He commenced his studies in grammar and other parts of literature at Rome, where he resided at the time of the emperor Julian's death. Donatus, the celebrated grammarian, was one of his preceptors; and his studies in logic and various branches of philosophy were directed by other teachers. His application and proficiency were very distinguished at an early period of life; and it appears that, during his residence at Rome, he cultivated the theory and practice of rhetoric, and laid the foundation of that extensive acquaintance with theology and ecclesiastical history, and also with the Hebrew language; in which he afterwards excelled. From Rome he removed to Gaul; and at Aquileia he formed an intimate acquaintance with Rufinus, a presbyter of that city. He afterwards returned to Italy, having collected, while he was in the western empire, a considerable library, to which in the progress of his life he made many valuable additions. From Italy he went into the East, where he spent several years, partly in the deserts of Syria, partly at Antioch, and partly at Constantinople. At Antioch he was ordained presbyter by Paulinus in 378; accepting the office on condition that he should not be confined to one church, or be drawn away from that monastic life which he conceived to be most favourable to the prosecution of his studies. On this kind of life he seems to have entered when he was 30 years of age; and though during a period of four years he enlarged his acquaintance with the oriental languages, and with those branches of knowledge which assisted him in understanding and interpreting the scriptures, the austerities he practised had so impaired his health, that it became necessary for him to return to Antioch, in order to recruit his strength. The church at Antioch was at this time distracted by contending parties; but Jerome declined taking a decided part with either of them, till he had obtained a letter from Damasus, bishop of Rome, which determined him to espouse the cause of Paulinus. Having, after his ordination, which we have already mentioned, resided for some time at Bethlehem, he made an excursion from thence to Constantinople, with a view of deriving benefit from the instructions of Gregory Nazianzen, and from whom he learned, as he himself acknowledges, the right method of expounding the holy scriptures. In the year 382, he accompanied Paulinus, bishop of Antioch, and Epiphanius, bishop of Salamis in the island of Cyprus, to Rome; and here he was employed by pope Damasus, as his secretary, in conducting a variety of negotiations for extending the authority of the papal power. In the superintendance of a society of Roman ladies, who had renounced the world, and devoted themselves to a religious life, which Damasus assigned him, he acquitted himself to the satisfaction of the pope; but not without incurring the displeasure of the friends and relations of those weak fe-

males, who abandoned their stations in civil society, and misapplied their wealth to the support of useless and pernicious institutions. He had likewise other enemies, who disapproved the freedom with which he reprehended the corrupt manner of the clergy, and the vices of the people. Another circumstance that rendered his situation at Rome unpleasant to him was the part he took in his disputes with the followers of Origen, whom he had often commended, and many of whose works he had translated into Latin, but whose peculiar opinions he now opposed as heretical. The Origenists were thus exasperated, and circulated some scandalous but unfounded reports of a disreputable connection with Paula, in whose house he lodged, and who afterwards, with her daughter, followed him to the East. (See **EUSTOCHIUM**.) Jerome, thus disquieted at Rome, determined to return to the East; and the death of Damasus hastened the execution of his purpose; and in 385 he embarked on board a ship bound for Antioch. From Antioch he went to Jerusalem, where he pretends to have been witness to a number of miracles, which have gained little credit either among Protestants or respectable Catholics. In Egypt he attended the lectures of the learned Didymus, and he visited the monasteries in the desert of Nitria. In 385 he settled at Bethlehem, where he was joined by Paula and other ladies who had followed him from Rome, as well as by many other persons of both sexes, who admired his piety, and who were attached to his strict discipline. At Bethlehem Paula founded a church and four monasteries, one for men, which was committed to the superintendance of Jerome, and three for women, over which she herself presided. In this situation he employed his talents and learning to many useful purposes, in the education of several young persons of rank, and in the composition of various works, that reflect honour on his name and memory; and he might have been as happy as he was useful, if he had not indulged an intemperate detestation of the opinions of Origen, and engaged in numerous ardent contests with those who defended and propagated them. In 410 the monastery of Jerome afforded an asylum to many of those fugitives who sought relief in the Holy Land from the ravages of the Goths, who laid Italy waste, and besieged Rome; but such was the unjustifiable bigotry of his temper, that he excluded all who favoured the opinions of Origen from a share in his hospitality: At Bethlehem Jerome terminated his life in the year 420.

Few will be inclined to dispute Jerome's title to the character of being the most learned of all the Latin fathers. This title is evinced by the testimony of the best judges, and by the numerous works of which he was the author. His judgment, however, was not sound and discriminating; nor was his reasoning perspicuous and accurate; and his style has been justly represented as more declamatory than argumentative. But the acrimony of his temper, and the total want of candour that appears in his controversial writings, throw a dark shade over all his other good qualities. "His complexion," says Mosheim, "was excessively warm and choleric; his bitterness against those who differed from him extremely keen; and his thirst of glory insatiable. He was so prone to censure, that several persons, whose lives were not only irreproachable, but even exemplary, became the objects of his unjust accusations." The learned Cave says, "he was a very hot and furious man, who exercised no command over his passions. When once provoked, he treated his adversaries in the roughest manner, and did not even abtain from invective and satire; witness what he has written against Rufinus, who was once his friend, John of Jerusalem, Jovinian, Vigilantius, and others. Upon these men, when

when they gave him the slightest provocation, he poured forth a torrent of all the abusive terms which he could devise, without any regard to their persons, dignity, or learning." His behaviour to the Origenists; his declaration principally respecting such, "we receive and entertain all strangers without regard to merit; none are excepted but heretics;" and his other declaration in his controversy with Rufinus, "let us but have the same faith, and we are reconciled," preclude the charge of want of candour, if we say that Jerome would not have confined himself to the mere abuse and invective of words, if he had been entrusted with power. There is but a step between starving heretics in distress, and trying them to the stake. None can approve of the high terms in which he extols celibacy and virginity, so as to seem to disparage the marriage state; and of his culpable credulity we have ample evidence. The candid Lardner, without disguising or condemning the charges which have been alleged against him upon the best authority by others, allows him to bear testimony in his own favour, and he acquits him from the imputation of vanity: thus he speaks of himself in various passages collected from his works: "That he had been from the beginning diligent and inquisitive; that all his days he had been employed in the schools of rhetoricians and philosophers, or in reading the scriptures of the Old and New Testament; that, beside Latin and Greek, he had endeavoured to make himself master of Hebrew; that he did not rely upon his own judgment and understanding in interpreting the scriptures, but consulted other commentators, and was willing to improve by their labours; that he never thought himself too old to learn, but embraced all opportunities of increasing in knowledge; that he was not employed, as many monks were, in making baskets of rushes, and screens of palm-leaves, to get a livelihood, but in studying the scriptures, and putting out correct editions of them."

Of all the productions of Jerome, the most useful are his interpretations of the sacred scriptures, and those of his letters, which contain critical remarks and dissertations on particular texts in the bible. The principal of his works, which are enumerated by Cave and Dupin, are, a new Latin version of the whole "Old Testament," from the Hebrew, accompanied with a corrected edition of the ancient version of the "New Testament," which, after having been at first much opposed, was adopted by the Catholic church, and is commonly distinguished by the appellation of "Vulgate," which see; "Commentaries" on most of the books of the Old and New Testament; "A Treatise on the Lives and Writings of Ecclesiastical Authors;" "A Continuation of the Chronicle of Eusebius;" moral, critical, historical, and miscellaneous "Letters." The first printed edition of his works was that at Basil, under the care of Erasmus, 1516—1526, in six vols. folio, of which there have been several subsequent impressions at Lyons, Rome, Paris, and Antwerp. The most correct edition is that of Paris, by Father Martianay, a Benedictine monk of the congregation of St. Maur, 1693—1706, in five vols. fol. Cave, H. L. vol. i. Dupin. Mosheim. Jortin's Rem. E. H. b. ii. pt. ii. Lardner's Works, vol. v. Gen. Biog.

In Jerom's works many particulars occur relative to the music of his time, and the chants of the church, especially in his commentary on the epistle to the Ephesians, ch. v. ver. 19. p. 652, where there is a memorable passage in favour of ecclesiastical singing: "Speaking to yourselves in psalms and hymns, and spiritual songs, singing and making melody in your heart to the Lord," cries out, "Audiant hæc adolescentuli: audiant hi quibus psallendi in ecclesia officium est, Deo non voce, sed corde cantandum: nec in Tragœ-

dorum modum guttur et fauces dulci medicamine collinendas, ut in ecclesia theatrales moduli audiantur et cantica, sed in timore, in opere, in scientia scripturarum."

JEROME of Prague, so called from the name of the city in which he was born, devoted his youth to the pursuit of knowledge, which he sought after in all the more considerable cities of Europe; particularly in those of Prague, Paris, Heidelberg, Cologne, and Oxford. In the four former universities he was admitted to the degree of M.A., and in one of them to that of D.D. in the year 1399. At the latter place he became acquainted with the works of Wickliff, many of which he translated into his native language. Upon his return to Prague, in the year 1400, he openly avowed himself a follower of Wickliff, and became attached to Hufs, who was at the head of the party in Bohemia, which had espoused the doctrines of the British reformer. Jerome, though superior to Hufs in abilities and learning, was not so well qualified as the leader of a party, because, with all his great and good qualities, he wanted that gentle, conciliatory temper for which Hufs was distinguished. They both concurred, however, in ardent efforts for restraining the despotism of the papal court, and reforming the licentiousness of the clergy. In the year 1410 he was invited by the king of Poland to regulate the university at Cracow; from Poland he went to Hungary, in which country he was accused of heresy; and upon his removal to Vienna he was imprisoned on account of his opinions, but obtained his liberty in consequence of the solicitation of the university of Prague. As soon as he heard that his friend Hufs was at Constance, ready to appear before the Council, he pathetically exhorted him to maintain a firm and unyielding temper in this great trial, and strenuously to insist upon the corrupt state of the clergy, and the necessity of reformation, assuring him, at the same time, that if he should receive information in Bohemia, that his adversaries were likely to overpower him, he would immediately repair to Constance, and give him every kind of assistance in his power. Hufs earnestly dissuaded him from the execution of his purpose, as equally unprofitable to him and dangerous to Jerome himself; but he was invincible, and arrived at Constance on the fourth of April, 1415, about three months before the death of Hufs. Although he entered the town privately, his visit and the design of it was soon made public; and he was informed by his friends that he could be of no service to Hufs, and that the council, so far from being disposed to hear him, intended to seize him. In these circumstances he thought it most prudent to retire, and accordingly withdrew to Iberling, an imperial town about a mile from Constance. From this place he addressed a letter to the emperor, professing his readiness to appear before the council, if that prince would give him a safe-conduct. But Sigismund had the honesty to refuse. Jerome then tried the council, but could obtain no favourable answer. In this state of perplexity he posted papers in all the public places of Constance, avowing himself prepared to appear at Constance in defence of his character and doctrine, which had been much defamed; and also his resolution to retract every error that should be proved against him, on condition that the faith of the council might be pledged for his security. As he received no answer to these papers, he set out on his return to Bohemia, carrying with him a certificate signed by several of the Bohemian nobility then at Constance, which testified that he used all possible means, which prudence suggested, in order to procure a hearing. At a village, upon the borders of the Black Forest, Jerome fell by accident into company with some priests, and a conversation occurring with reference to the council of Constance, Jerome became warm,

and among other severe things he called that assembly the "school of the devil," and "a synagogue of iniquity." The priests, incensed by this language, informed against him to the chief magistrates, by whom he was arrested and delivered into the hands of the duke of Sultzbach. The duke, having Jerome in custody, wrote to the council for directions; and he was desired to send his prisoner immediately to Constance. The elector-palatine then met him, and conducted him in triumph to the town; himself riding on horseback, with a numerous retinue, who led Jerome, in fetters, by a long chain, after him. As soon as he was brought before the council, the clamour against him became loud and tumultuous; and among others, who disgraced themselves on this occasion, was John Gerson, chancellor of the university of Paris, one of the most learned, as well as the most knowing men of his time, but destitute of that candour which usually attends knowledge. In the chancellor's invective and reproach the rectors of the universities of Cologne and Hiedelberg concurred; but Jerome had no opportunity of replying. A thousand voices burst out from every quarter, "Away with him! burn him! burn him!" After an interval of about half an hour the tumult partly subsided; and Jerome, availing himself of a momentary pause, looked round the assembly with a noble air, and cried out aloud, "Since nothing can satisfy you but my blood, God's will be done." He was then carried from the assembly into a dungeon, under the custody of a guard. Whilst he was ruminating upon his approaching fate in this cell, he heard a voice addressing him in these words, "Fear not, Jerome, to die in the cause of that truth, which, during thy life, thou hast defended." "Whosoever thou art," replied the intrepid prisoner, directing his eyes to the window from which the voice seemed to proceed, "who deignest to comfort an abject man, I give thee thanks for thy kind office. I have indeed lived defending what I thought the truth: the hardest task yet remains, to die for its sake; but God, I hope, will support me against flesh and blood." The guard was alarmed, and Maddonwitz, who had rendered services to Hufs, was discovered to be the offender. This incident was a pretence for a more severe treatment of Jerome, who was immediately conveyed to a strong tower, where, his hands being tied behind his neck, he was left to languish in that painful posture for two days, without any aliment besides bread and water. These severities were inflicted with the design of forcing him to make a recantation; and the illness which they occasioned, in the course of which he urged the council to allow him a confessor, afforded an opportunity of pressing him with arguments to this purpose. Jerome, however, remained immovable. A similar attempt was made upon him immediately after the death of Hufs; but he was still invincible. However, though he was not to be subdued by the simple fear of death, imprisonment, chains, hunger, sickness, and even torture, through a succession of many months, was too great a trial for human nature. Three times was he brought before the council, and carried back to the horrors of his dungeon, before his enemies could prevail against him. At length he began to waver; and on the 23d of September, a fatal day, which he recollected with shame and grief, he read a loud and ample recantation of all the opinions he had maintained, couched in words directed by the council. In this paper he acknowledged the errors of Wickliff and Hufs, entirely assented to the condemnation of the latter, and declared himself, in every article, a firm believer with the church of Rome. Having thus acted against his conscience, he retired from the council with a heavy heart. His chains, indeed, were taken away; but the load was transferred from his body to his mind. Vain were the caresses of those about

him: they only mocked his sorrow. His prison was now indeed a gloomy solitude. The anguish of his own thoughts had made it such. Paletz and Du Cassis, the chief managers against him, soon perceived this change; and they determined to bring him to a new trial. Several persons, however, and particularly the cardinals of Cambray and Florence, objected to a new trial. But their endeavours were ineffectual, a torrent of zeal and bigotry bore down all opposition; and even the learned Gerson again disgraced himself by joining in the tumultuous clamour; with great indecency employing his pen, as well as his tongue, upon this occasion. This kind of agitation continued for half a year: so that it was not till May in the year 1416, when Jerome was called again before the council. The prospect afforded him pleasure, and he rejoiced at an opportunity of acknowledging publicly that shameful defection, which hung so heavy upon him. The chief articles alleged against him were, his adherence to the errors of Wickliff—his having had a picture of that heretic in his chamber, arrayed in the common ornaments of a saint—his counterfeiting the seal of the university of Oxford in favour of Wickliff—his despising the authority of the church after excommunication—and his denial of transubstantiation. Having protested his innocence, and given a circumstantial detail of his coming to Constance, and of all that had since befallen him. He raised his voice, and having expressed himself with some asperity against his accusers, he told them that he was going to lay himself more open to them than he had yet done. He then, with great emotion, declared before the whole assembly, that the fear of death only had induced him to retract opinions which from his heart he maintained: that he had done injustice to the memory of those two excellent men, John Wickliff and John Hufs; whose examples he revered, and in whose doctrine he was determined to die. He concluded with a severe invective against the clergy; the depravity of whose manners, he said, was now every where notorious. His speech produced a wonderful effect on the whole assembly; and many wished that his life might be saved. His judges, however, precipitated the passing of sentence; and on the same day, or a few days after, he was condemned for having held the errors of Wickliff, and for apostatizing. He was then immediately delivered over to the civil power, and, attired with a cap like that with which Hufs had been adorned, he was led to execution. The post to which he was chained was hewn into a monstrous and uncouth figure of Hufs, and ornamented into a ridiculous likeness of him. When the wood began to blaze, he sang a hymn; and when the flames scorched him, he was heard to cry out "O Lord God! have mercy upon me!" and a little afterwards, "Thou knowest how I have loved the truth." The wind parting the flames, his body, full of large blisters, exhibited a dreadful spectacle to the beholders; his lips continued still moving, as if actuated by intense devotion. During a full quarter of an hour, he discovered the signs, not only of life, but of intellect. Even his enemies thought the rage of his judges pursued him too far, when they saw his wretched coverlet, and the other miserable garniture of his prison, by their order, consumed in the fire after him; and his ashes, as those of Hufs had been, thrown into the Rhine.

The celebrated Poggio of Florence was present at the trial of Jerome, and in a letter to his friend Leonard Aretine, has given an interesting account of it. For the whole letter we refer to Shepherd's life of Poggio Bracciolini, and for several extracts to Gilpin's life of Jerome. "It was indeed amazing," says this celebrated writer, "to hear with what force of expression, with what fluency of language, and with what excellent reasoning he answered his adversaries;

adversaries; nor was I less struck, with the gracefulness of his manner; the dignity of his action; and the firmness and constancy of his whole behaviour."—"Here," said Jerome, as cited by this writer, standing in the midst of the assembly, "here is justice; here is equity. Beset by my enemies; I am already pronounced a heretic; I am condemned, before I am examined.—Were you Gods omniscient, instead of an assembly of fallible men, you could not act with more sufficiency. Error is the lot of mortals; and you, exalted as you are, are subject to it. But consider, that the higher you are exalted, of the more dangerous consequence are your errors.—As for me, I know I am a wretch below your notice: but at least consider, that an unjust action, in such an assembly, will be of dangerous example." When Jerome was accused of hating and defaming the holy see, the pope, the cardinals, the prelates, and the whole estate of the clergy, he stretched out his hands, and said, in a most moving accent, "On which side, reverend fathers, shall I turn me for redress? whom shall I implore? whose assistance can I expect? which of you hath not this malicious charge entirely alienated from me? which of you hath it not changed from a judge into an inveterate enemy?—It was artfully alleged indeed! Though other parts of their charge were of less moment, my accusers might well imagine, that if this were fastened on me, it could not fail of drawing upon me the united indignation of my judges."

On the third day of this memorable trial, what had past was recapitulated; when Jerome, having obtained leave, though with some difficulty, to speak, began his oration with a prayer to God; whose divine assistance he pathetically implored. He then observed, that many excellent men, in the annals of history, had been oppressed by false witnesses, and condemned, by unjust judges. Beginning with profane history, he instanced the death of Socrates, the captivity of Plato, the banishment of Anaxagoras, and the unjust sufferings of many others. He then instanced the many worthies of the Old Testament, in the same circumstances, Moses, Joshua, Daniel, and almost all the prophets; and lastly those of the New, John the Baptist, St. Stephen, and others, who were condemned as seditious, profane, or immoral men. An unjust judgment, he said, proceeding from a laic was bad; from a priest, worse; still worse from a college of priests; and from a general council, superlatively bad.—These things he spoke with such force and emphasis, as kept every one's attention awake.

"The perjured witnesses," said Jerome, "who have appeared against me, have won their cause; but let them remember they have their evidence once more to give before a tribunal, where falsehood can be no disguise."

"His voice," says Poggio, "was sweet, distinct, and full: his action every way the most proper, either to express indignation, or to raise pity; though he made no affected application to the passions of his audience. Firm and intrepid he stood before the council; collected in himself; and not only condemning, but seeming even desirous of death. The greatest character in ancient story could not possibly go beyond him. If there is any justice in history this man will be admired by all posterity.—I speak not of his errors: let these rest with him. What I admired was his learning, his eloquence, and amazing acuteness. God knows whether these things were not the ground-work of his ruin."

"With a cheerful countenance, and more than Stoical constancy, he met his fate; fearing neither death itself, nor the horrible form in which it appeared. When he came to the place, he pulled off his upper garment, and made a short prayer at the stake: to which he was soon after bound with

wet cords, and an iron chain; and included, as high as his breast with faggots.

"Observing the executioner about to set fire to the wood behind his back, he cried out: 'Bring thy torch hither. Perform thy office before my face. Had I feared death, I might have avoided it.'

"As the wood began to blaze, he sang an hymn, which the violence of the flames scarcely interrupted.

"Thus died this prodigious man. The epithet is not extravagant. I was myself an eye-witness of his whole behaviour. Whatever his life may have been, his death, without doubt, is a noble lesson of philosophy." See BRACCIOLINI.

JEROME DE SANTA FÉ, a learned Spanish Jew in the fifteenth century, whose original name was Joshua Larchi. He became a Christian, and upon his baptism changed his name for that under which he has been just described. He was physician to Peter de Luna, who was chosen pope by the cardinals at Avignon in opposition to Boniface IX., and took the name of Benedict XIII. When this pontiff was in Spain, in the year 1412, he ordered a public conference to be held between some learned Christians at Tortosa, and the most celebrated Jewish rabbis in Arragon and Catalonia, on the subject of the Messiah's character, and the evidence brought forwards to prove that Jesus of Nazareth was that person: on this occasion Jerome acquitted himself with credit to his own learning and abilities, and to the new faith which he had embraced. In the following year he presented to the pope a treatise in confutation of the errors of the Jews, and another against the Talmud, which are said to have produced such an impression upon the Jews, that more than five thousand became Christians. They were published at Frankfort under the title of "Hebræo-magistis," in the year 1602.

JEROM'S Channel, *St.*, in *Geography*, an inlet in the straits of Magellan, which branches off to the N.N.W. about 20 miles in length, forming a communication between the Straits and Indian sound.

JEROM'S Point, *St.*, a cape on the coast of Patagonia, in the straits of Magellan, forming the W. point of entrance into St. Jerom's channel; 11 miles E. of cape Quad.

JERONIMO DE TAOS, *St.*, a town of New Mexico, on the Brava; 62 miles N. of Santa Fé.

JERONYMITES, or HIERONYMITES, a denomination given to divers orders, or congregations of religious; otherwise called *Hermits of St. Jerom*.

The first, called *Hermits of St. Jerom* of Spain, owe their origin to the third order of St. Francis, whereof the first Jeronymites were members. Gregory the eleventh confirmed this order under the name of St. Jerom, whom they had chosen for their patron, and their model; and gave them the constitutions of the convent of St. Mary of the Sepulchre, with the rule of St. Augustine; and for habit, a white tunic, with a scapulary, a little capuche, and a mantle, all of their natural colour, without dyeing, and of a mean price.

The Jeronymites are in possession of the convent of St. Laurence, in the Escorial, where the kings of Spain are buried.

In Spain there is likewise an order of nuns of St. Jerom, founded by a lady towards the close of the 15th century. Sixtus put them under the jurisdiction of the Jeronymites, and gave them the constitutions of the monastery of St. Martha of Cordova, which were afterwards changed by Leo X. for those of the order of St. Jerom.

Hermits of St. Jerom, of the Observance, or, of Lombardy, were founded by Lupus d'Olmedo in 1424, in the mountains of Cazalla, in the diocese of Seville.

The third order of Jeronymites was founded by Peter Gambacorti, about the year 1377; but the vows they made were only simple, till 1568, when Pius V. appointed them to be solemn. They have houses in Tyrol, Italy, and Bavaria.

The fourth congregation of Jeronymites, are the *Hermits of St. Jerom of Fiezoli*, begun in 1360, when Charles de Montegraneli, of the family of the count of that name, retiring into solitude, first established it at Verona. It was approved by Innocent VII. under the title and constitutions of St. Jerom. But Eugenius IV. changed it for that of St. Augustine. As the founder was of the third order of St. Francis, they preserved that habit; but, in 1460, Pius, permitting such as pleased to change it, occasioned a division among them. This order was finally suppressed by Clement XI. in 1668.

JEROPOTAMO, in *Geography*, a river of Candia, anciently "Lathæus," which runs into the Mediterranean, 8 miles N.N.W. of cape Metala.

JERSEY, an island in the British Channel, N. lat. $49^{\circ} 25'$. W. long. $2^{\circ} 11'$, situated about four leagues from the coast of Normandy, and 25 from that of England. It is considered as belonging to Hampshire, and comprizes an area of 12 miles in length by six in breadth; forming about 72 square miles, English measure. The island is divided into 12 parishes (having only eight churches), subordinate to the see of Winchester, and contains the two towns of St. Helier's and St. Aubin's. The population of the isle amounts to about 20,000, of which 3000 are able to bear arms, and are formed into two regiments. The shores abound with rocks and quicksands. On the northern side the cliffs are from 40 to 50 fathoms in height; but the southern shore is nearly level with the sea. A mountainous range runs through the centre, the sides of which abound with orchards; from the produce large quantities of cyder are made annually. It is computed that 24,000 hogheads have been made in one year. This propensity of the inhabitants for cyder has occasioned them to convert their arable lands into orchards; and hence they have been obliged to import corn from the Baltic, England, and, in times of peace, from France. Formerly they raised enough, not only for home consumption, but for exportation. An abundance of cattle and sheep are reared here; and native wool forms an important article for trade and manufacture. There were formerly five monastic foundations in the island. All the accessible parts of the coast are well fortified with batteries, watch towers, &c. The latter have embrasures for small cannon, and loopholes for musketry. St. Aubin's bay is guarded by two very strong castles, or forts. These, and the whole military government of the island, are under the controul of a governor, an officer nominated by the English ministry. The civil jurisdiction is vested in a bailiff and 12 jurors, who are regulated by local laws chiefly derived from the ducal customs of Normandy. Jersey, Guernsey, Sark, and Alderney, were formerly part of the duchy of Normandy; and, though now united to the British crown, still preserve many Norman customs and laws. The legislature of England cannot enforce any law here unless it has previously been sanctioned by the bailiff and jurors. Some of the Jersey merchants employ several vessels in the Newfoundland trade. The French language is generally spoken here, and this is mostly used both in the pulpit and at the bar. Elizabeth castle, the principal fort of the island, was begun by queen Elizabeth, and hence its name. King Charles I. enlarged it; and king Charles II. who was twice here, increased and completed it. The governor and garrison now reside here, and the whole occupies an island in St. Aubin's bay. Mount-Orgeuil

castle was a place of strength before Henry the Fifth's reign, and was a fortress of very considerable consequence in the time of Edward III. This was also strengthened by queen Elizabeth. It stands on an eminence which is ascended by 200 steps. From the top may be seen the cathedral of Constance. This island is said to have abounded with druidical temples and altars. Bindaxtro, who wrote some tracts concerning Jersey, and died in 1691, states, that there "were not less than 50 of these temples and altars in the island," of which the greater part were destroyed when Falle wrote his history. The Cromlechs are here called Pouque-lays. In Camden's *Britannia*, vol. iii. p. 751, edit. 1789, is an extract of a letter from Mr. Morant to Dr. Stukeley, giving an account of several of these remains; and in Grose's *Antiquities* is a particular description, with two plates, of a very singular circular temple, which was found covered over with earth near the town of St. Helier. This was removed to Park Place, Berkshire, by general Conway, who was governor of the island when it was found.

In January 1781, the French, under baron de Rullicourt, landed here, and took possession of the garrison, the governor, &c. Major Pierfon, the second in command, attacked the French, and so desperate was the conflict that both of the commanders were killed, but the invaders were compelled to surrender as prisoners of war. Falle's *Account of Jersey*. Camden's *Britannia*. Grose's *Antiquities of England*.

JERSEY, *New*, one of the United States of America, situated between 39° and $41^{\circ} 24'$ N. lat. and between the meridian of Philadelphia and 1° E. long.; and bounded E. by Hudson river and the sea; S. by the sea; W. by Delaware bay and river, which divides it from the states of Delaware and Pennsylvania; N. by a line drawn from the mouth of Mahakkamak river, in lat. $41^{\circ} 24'$ to a point on Hudson river in lat. 41° . This province is 160 miles long and 52 broad, and contains about 8320 square miles, or 5,324,800 acres. It is said to have been first discovered by capt. Hudson, who, in 1609, entered into the service of the Dutch, by whom it was first settled, about the year 1614. Its original inhabitants were a tribe of Indians, who called themselves Linnellinopes; by the French they were denominated Les Loups, and by the English, Delawares. This confederacy comprised numerous subordinate clans, of which the principal were the Chihocki, who dwelt on the W. side of the river Delaware; the Wanami, who ranged from the Raritan in New Jersey to the sea-coast; the Munseys, on the upper streams of the Delaware, down to the Leheigh; the Wabingas, or river Indians, who resided between the Delaware and Hudson, and from the Kittatany to the Raritan; and the Mohickons or Mankattans, who occupied Staten island, York island, and part of Long island, from the highlands to the ocean. These confederate tribes waged war for the greatest part of a century with the Iroquois, or five nations, but were at last subdued, and reduced to the most humiliating terms, about the year 1682, when William Penn landed in Pennsylvania.

This province formed a part of a large tract of country called New Belgium, or New Netherland; and being ceded to the English, it was granted, in 1664, by Charles II. to his brother James, duke of York, who made it over to lord Berkeley and sir George Carteret. After several divisions and transfers, which were sources of quarrels and confusion, the proprietors, in the year 1702, surrendered their charter to the crown, and the country was united to the government of New York. In 1706 Jersey was made a separate government. New Jersey is now divided into 13 counties, which are subdivided into 94 precincts or townships, as in the annexed table.

TABLE.

JERSEY.

T A B L E.

| | Counties. | Principal Towns. | Length. | Breadth. | Total Number of Inhabitants. | Number of Slaves. | |
|---|------------------|---------------------------------|---------|----------|------------------------------|-------------------|-----|
| These seven counties lie from S. to N. on Delaware river. Cape May and Gloucester extend across to the sea. | Cape May | None | 30 | 9 | 571 | 141 | |
| | Cumberland | Bridgetown | 50 | 20 | 8,248 | 120 | |
| | Salem | Salem | | | 10,437 | 172 | |
| | Gloucester | Woodbury and Gloucester | } | 30 | 22 | 13,360 | 191 |
| | Burlington | Burlington and Bordentown | | | | | |
| | Hunterdon | Trenton | 37 | 12 | 20,253 | 1,301 | |
| | Suffex | Newtown | | | 19,500 | 439 | |
| Bergen | Hackinsack | | | 12,601 | 2,301 | | |
| These four counties lie from N. to S. on the eastern side of the state. | Essex | Newark and Elizabethtown | } | | 17,785 | 1,171 | |
| | Middlesex | Amboy and part of Brunswic | | | | | |
| | Monmouth | Freehold | 80 | 30 | 16,918 | 1,596 | |
| | Somerfet | Boundbrook and part of Brunswic | } | | 12,296 | 1,810 | |
| | Morris | Morristown | | | | | 25 |
| Total, | Thirteen. | | | | 184,139 | 11,423 | |

The militia of this state in 1793 amounted to 19,077, between the ages of 18 and 45 years; and the whole number of men capable of bearing arms amounted to between 30 and 40,000. The government of this state is vested in a governor, chosen annually by the council and assembly jointly, a legislative council composed of one member from each county, chosen annually by the people and general assembly, composed of three members chosen as above. The governor sits in and presides over the legislative council; his privy or executive council consists of any three members of the legislative council; and the governor and any seven members of the council are a court of appeal in the last resort as to points of law in civil cases, and possess a power of pardoning criminals in all cases whatever. The council may originate any bills, excepting preparing and altering any money bill, which is the sole prerogative of the assembly. Every bill is read three times in each house. None of the judges of the supreme court, or other courts, sheriffs, or any person possessing any post of profit under the governor, justices of peace excepted, is entitled to a seat in the assembly. The courts of justice in this state are justices' courts, courts of quarter-sessions of the peace, courts of common-pleas, supreme courts, orphans' courts, courts of chancery, and high court of errors and appeals. The English laws, as far as they are not repugnant to revolution principles, are adopted by the constitution; but in the distribution of property, where there is no will, each son has two shares, and each daughter has one share. In this state there are about 50 Presbyterian congregations, subject to the care of three presbyteries: viz. those of New York, New Brunswick, and Philadelphia. Besides these there are upwards of 40 congregations of Friends, 30 of the Baptists, 25 of Episcopalians, 28 of Dutch Reformers, 20 of the Methodists, and a settlement of Moravians. All are allowed by the constitution to worship God according to the dictates of their own consciences; and are not compelled to attend or support any worship contrary to their own faith and judgment. All Protestant inhabitants, of peaceable beha-

viour, are eligible to the civil offices of the state. For the colleges in this state, see COLLEGE. The capital town of this province is Trenton; besides which there are Burlington, Perth Amboy, Brunswick, Elizabethtown, Newark, Swedesborough, Salem, &c. which see respectively. The rivers in this state, though not large, are numerous; the principal are the Passaic, Raritan, Hackinsack, Delaware, Cohansey creek, Mulicus, Alloway creek, Ancocus creek, Paulin's Kiln, Raccoon creek, Salem creek, and some others. This state is remarkable for mill-seats, 1100 of which are already improved; 500 with flour-mills, and the rest with saw-mills, fulling-mills, forges, furnaces, slitting and rolling-mills, paper, powder, and oil-mills. The greatest part of the soil of New Jersey is sandy; some of it barren and unfit for cultivation; but that near the sea-coast is said to be many feet deep, in some places 50, without rocks or stones, when you come to salt-marsh, and has much the appearance of being artificial; the good land in the southern counties lies principally on the banks of rivers and creeks; the soil on these banks being generally a stiff clay, which, in its natural state, produces various species of oak, hickory, poplar, chestnut, ash, &c. The barren parts produce little else but shrub-oaks and yellow pines. These sandy lands yield an immense quantity of bog-iron ore, which is wrought very advantageously in the iron-works in these counties. The salt meadows along the lower part of the Delaware river and bay afford plentiful pasture for cattle in summer, and hay in winter; but the swarms of muskitoes in the months of June, July, and August, are very troublesome both to man and beast. The inhabitants along the sea-coast subsist principally by feeding cattle on the salt-meadows, and by various kinds of fish, abundantly supplied by the sea, rivers, and creeks. They raise Indian corn, rye, potatoes, &c. but not for exportation. Their swamps afford lumber, which is conveyed with ease to a good market. The sugar maple-tree is common in Suffex county, upon the Delaware. In the hilly and mountainous parts of the state, which are not too rocky for cultivation, the soil is of a stronger kind,

kind, covered, in a state of nature, with stately oaks, hickories, chestnuts, &c. and when cultivated, producing wheat, rye, Indian corn, buck wheat, oats, barley, flax, and fruits of all kinds common to the climate. The land in this hilly country is good for grazing, and farmers feed great numbers of cattle for the markets of New York and Philadelphia; and many of them keep large dairies, as there are large tracts of fine meadows between the hills. The orchards in many parts of the state are said to be equal to any in the United States, and the cider is reckoned the best in the world. Those parts of New Jersey that are contiguous to New York and Philadelphia, supply their markets with many kinds of vegetables, as apples, pears, peaches, plums, strawberries, cherries, and other fruits; cider in large quantities, and of the best quality, butter, cheese, beef, pork, mutton, and other meats.

The trade of New Jersey is carried on almost solely with New York and Philadelphia; though it has some good ports of its own. The articles exported are chiefly wheat, flour, horses, live cattle, hams which are much commended, lumber, flax-seed, leather, iron in great quantities, and formerly copper-ore. The imports consist chiefly of West India goods. The manufactures of this state have been inconsiderable, though they are now improving; and they consist principally of the articles of iron, nails, and leather. Tanneries are numerous and valuable; paper-mills and nail manufactories are wrought with profit in several parts of the state. Wheat is also manufactured into flour, and Indian corn into meal; and these are profitable articles. But iron is the most ample source of wealth to the state. Iron-works are erected in Gloucester, Burlington, Sussex, Morris, and other counties. In the whole state it is supposed there are yearly made about 1200 tons of bar-iron, 1200 ditto of pigs, and 80 ditto of nail-rods, exclusive of hollow ware, and various other castings, to a great amount. This state affords vast quantities of iron and copper-ore. The iron-ore is of two kinds: one capable of being manufactured into malleable iron, and found in mountains and low barrens; and the other called bog-ore, found in rich bottoms, and yielding iron of a hard, brittle quality, which is commonly manufactured into hollow ware, and used sometimes instead of stone in building. Many copper-mines have been discovered in different parts of the state. Mines have also been discovered of lead and plaster of Paris, and the state is said also to contain coal. In the town of Newark and its vicinity, there are immense quarries of valuable stone, much used in building.

The inhabitants of this state are a collection of Low Dutch, Germans, English, Scotch, Irish, and New Englanders, or their descendants; and of course differ much in their manners and character; and this difference is in some measure increased by different forms of religion, and also by intercourse with the inhabitants of other states. The people in West Jersey trade to Philadelphia, and incline to the fashions and manners of that city: whilst those of East Jersey trade to New York, and acquire a resemblance to the inhabitants of this capital. But whatever differences may subsist among them in consequence of these circumstances and of their different occupations and professions, the people of New Jersey are generally industrious, frugal, and hospitable. The women are allowed to be discreet, amiable, genteel, and also handsome, in due proportion to their whole number. Morse's American Universal Geography, vol. i. 1805.

JERSEY, *New*, in *Botany*. See CEANOETHUS.

JERSEY, among *Woolcombers*, denotes the finest wool, taken from the rest by dressing it with a Jersey comb.

JERTH, in the *Materia Medica*, a name given to a certain kind of moss, according to Schæffer, growing very plentifully in Lapland, and other cold countries. The root of this is the part used in medicine, and the method of giving it is in decoction. They boil a large quantity of it in the whey made of rein-deer's milk, and give the patient large draughts of it warm every hour or two; by that means keeping up a good perspiration, which they increase or diminish according to the nature of the case. The principal diseases to which they are subject are pleuritis and the small-pox; and it is wonderful to find how well they get through these two dangerous complaints by this regimen alone. Upon the whole, the virtue of so much warm and diluting liquor seems the principal thing to be depended upon by them; for if they cannot readily get the jerth root, they scruple not to supply its place with the stalks of angelica, and the medicine seems to succeed as well this way as the other, both in the small-pox and other cases.

JERVAS, CHARLES, in *Biography*; a portrait painter, whose name is more indebted for its reputation to his pupil Pope having offered false incense to him in a copy of verses, than to his own merits. He was a pupil of Kneller, and acquired a fortune by marriage. He died in 1739.

JERVIS'S CANAL, in *Geography*, an inlet or arm of the Pacific ocean, on the W. coast of North America, in the gulf of Georgia, examined and so named by captain Vancouver in the year 1792. N. lat. 49° 40'. E. long. of the entrance 236° 22'.

JERUSALEM, derived from *ירושלם*, *to see*, and *שלום*, *peace*, *q. f.* the vision or inheritance of peace, a celebrated city of Asia, the capital of Palestine or Judea, is supposed, though perhaps without sufficient authority, to have been built on the site of Melchizedek's *Salem*, and hence called "Salem" and "Solyma." It was situated in the midst of a rocky and barren country, on the frontiers of the two tribes of Benjamin and Judah, so that it was sometimes considered as a part of the one, and sometimes of the other; but by the distribution of Joshua (ch. xviii. 28.) it belonged to Benjamin, whereas it pertained to Judah by right of conquest, this tribe having twice subdued it, first under the Judges, and afterwards under David. After the building of the Temple, it was considered as the metropolis of the nation, belonging to all Israel in common, and not properly either to Benjamin or Judah. Jerusalem was founded upon hills, and surrounded by mountains: the two largest hills were Zion and Acra, upon which the first buildings were erected; and on mount Moriah, Solomon, at a subsequent period, built the temple. Mount Zion bounded to the south the whole circumference, and reached from east to west: the western side was the most elevated, and circumscribed by the valley of Hinnom, or Ge-hinnom, as the eastern was by that of Jehosaphat, which is supposed to have joined the other towards the south. Here were the fountains of Gihon and Siloam, the brook Kidron, and the waters of Ethan, which Pilate, at a much later period, conveyed through aqueducts into the city. To the north of Zion was another valley, called by Josephus "the valley of Cheesemongers," probably the same as that distinguished in Zephaniah (ch. i. 11.), by the epithet "Machtheh," which the LXX. have translated *την κατάκείμενην*, *q. d.* that which was cut in or made hollow. Acra, with the said valley to the south, stood to the north of Zion, having its declivity on every side equal. Upon Zion stood the High city, called, in the time of Josephus, the High Market-place; the Lower city stood upon Acra, but before that period bore other names. The ancient city Jebus, which David took from the

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the Jebusites, was not large: it stood on a mountain S. of the temple. When David subverted and expelled the Jebusites, he seized their fortrefs and city, B. C. 1048, and called the latter after his own name, "the City of David." Between the mountains, Zion and Acra, on which the Upper and Lower cities were erected, there was a valley, which separated the two cities, but which was filled up by David and Solomon, so that the two cities were joined. 1 Kings, ix. 15. 24. xi. 27.

Jerusalem, in its most flourishing state, was divided into four parts, each inclosed within its own walls; namely, the old city of Jebus, which stood on mount Zion, where the prophets dwelt, and where David built a magnificent castle and palace, which became the residence both of himself and his successors; on which account it was emphatically styled "the City of David." The "Lower City," called also the "Daughter of Zion," being built after it, on which stood the two magnificent palaces which Solomon built for himself and his queen; that of the Maccabean princes; and the stately amphitheatre raised by Herod, capable of containing 80,000 spectators; the strong citadel by Antiochus, to command the temple, afterwards razed by Simon the Maccabee, who recovered the city from the Syrians; and lastly, a second citadel, built by Herod, upon a high and craggy rock, called by him Antonia. The "New City," mostly inhabited by tradesmen, artificers, and merchants: and "Mount Moriah," on which appeared the celebrated temple of Solomon, described in the 6th and 7th chapters of the 2d book of Kings, destroyed by Nebuchadnezzar, re-built by the Jews on their return from Babylon, and afterwards renewed, augmented, adorned, and enriched by Herod. See TEMPLE.

Little is said concerning the walls of Jerusalem. We read, however, that after David had taken "the strong hold of Zion," he called it the city of David, and dwelt in that fort, having built round about Milla and inward. Solomon, from whose time the appellation of Jerusalem seems to have superseded that of Jebus, and his successors, took care to improve the walls. Hezekiah built up that part which was demolished by Joash, king of Israel, and added another without. After the reign of Manasseh, there is mentioned a new city, called the "Second," inclosed with walls by that prince. (2 Chron. xxiv. 22. xxxiii. 14. 2 Kings, xxii. 24.) The Maccabees considerably enlarged it on the north, by inclosing a third hill, as part of Jerusalem. Josephus speaks of a 4th hill, called "Bezetha," which Agrippa joined to the city: this new city lay north of the temple, along the brook Kidron, or Cedron. In ancient Jerusalem there were ten gates, five from W. to E. by S., and five others by N. Nehemiah mentions also four towers. It is not easy to ascertain the extent of this city in its different changes. Its most ancient state of perfection was in the reign of Solomon, in whose time this city appeared in its greatest splendour. In this state of uncertainty about its limits, we may venture to state its circumference at first to have been seven or eight stadia, or a Roman mile. In Solomon's time it was, without doubt, twice or three times as large. After the captivity, when it was rebuilt, it occupied much the same space as before, as we may infer from Nehemiah's description of the ruins, and its condition after it was repaired. According to Josephus, the whole circumference of Jerusalem was 33 stadia, or about four miles 125 paces. But Hecatæus, who describes it as it was in his time, under Ptolemy Lagus, gives it no less than 50 stadia, probably including the out-parts, which did not properly belong to it; and Hecatæus adds, that there were in Jerusalem 120,000 inhabitants; which statement is not improbable. The cir-

cumference of the ancient city, according to Eusebius, (Præp. Evang. l. ix. c. 36.) was 27 stadia, or 2550 toises. A plan, says Gibbon, taken on the spot, assigns no more than 1980 for the modern town. For the different opinions respecting its measurement, we refer to Villalpendus and Reland.

From the period of the reign of Solomon, when the temple was dedicated, B. C. 1004, to the destruction of the city, it underwent many revolutions and vicissitudes; some of the principal of which we shall recite. In the fourth year of the reign of Rehoboam, son of Solomon, B. C. 971, the city was besieged and taken by Shishak, or Sefac, king of Egypt, who carried away the treasures of the temple, as well as of the royal palace. In about a century after, B. C. 826, Jehoash, king of Israel, advanced to Jerusalem, having taken Amaziah, king of Judah, and plundered the temple and royal palace, and demolished the city-walls. (2 Kings, xiv. 13. 2 Chron. xxv. 23.) In the year B. C. 608, Pharaoh Necho, king of Egypt, having slain Josiah, king of Judah, captured his son Jehoahaz, who had been raised to the throne in the room of his father, imposed upon Jehoiakim, appointed by Necho as his successor, a tax of 100 talents of silver, and 10 of gold, pillaged the city and temple, and thus made Jerusalem tributary to Egypt. In the 4th year of Jehoiakim, B. C. 606, Nebuchadnezzar besieged Jerusalem, which now fell under the dominion of the Chaldeans. When Jehoiakim attempted three years after to throw off the yoke of servitude, the king of Chaldea sent a powerful army against him, which desolated Judea, took Jehoiakim prisoner, and put him to death, carrying away a number of his subjects as slaves to Babylon. His son Jehoiachin, who succeeded him, reigned at Jerusalem only three months. Nebuchadnezzar laid siege to Jerusalem, and compelling Jehoiachin to surrender, carried him, his family, and many of the inhabitants captive to Babylon. Upon this occasion Nebuchadnezzar seized on all the riches of the temple and royal palace, and destroyed those golden vessels which Solomon had appropriated to the service of God. In the room of Jehoiachin, Zedekiah was raised to the throne; but when this prince rebelled against the king of Chaldea, he sent an army against Jerusalem, which, in the 11th year of Zedekiah, B. C. 588, took the city, and, after putting out his eyes, carried him away as a captive. Nebuchadnezzar, being then at Kiblah, a city of Syria, sent his general Nebuzaradan utterly to destroy Jerusalem. The walls of the city were razed, the royal palace and temple were demolished, their riches and ornaments transported to Babylon, and the people were carried away into slavery. Cyrus, king of Persia, having conquered Babylon in the year B. C. 538, set the Hebrews at liberty, and in the year B. C. 536, issued an edict for their return to their own land, for a restoration of the sacred vessels carried away by Nebuchadnezzar, and for the rebuilding of their temple, after a captivity of 70 years, if we reckon from the fourth year of Jehoiakim, B. C. 606. (See CAPTIVITY.) The Jews, obstructed by the Samaritans, and other hindrances, were 20 years employed in constructing this new edifice, so that it was finished in the year B. C. 515. But the walls and gates were not rebuilt till after the return of Nehemiah, in the space of 12 years and four months, the 82d year after the decree of Cyrus, or B. C. 454. After the time of Nehemiah, Jerusalem enjoyed peace till the year B. C. 332, when Alexander, having taken Tyre, demanded assistance of the Jews; and being refused by the chief priest, who pleaded as an oath made to Darius not to take part with his enemies, the conqueror was incensed, and repairing to Jerusalem, determined to be revenged on the city and its inhabitants;

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but being met by a multitude of people dressed in white, the priests arrayed in their robes, and the high priest in a garment of purple and gold, having on his head a tiara, with a plate of gold above it, upon which was inscribed the name of the Lord, his passion subsided; and approaching the high priest, he offered his adoration to God, and paid his respects to Jaddua, and saluted all the Hebrews. After the death of Alexander, Jerusalem remained subject to the kings of Egypt; Ptolemy Soter, the son of Lagus, having taken it by stratagem in the year B.C. 320, and having carried into captivity about 100,000 persons. In the year B.C. 170, Antiochus Epiphanes besieged Jerusalem, pillaged the city and temple, put to death 80,000 of the inhabitants, made 40,000 of them slaves, and sold 40,000 more. Three years after, the sacrifices were interrupted in the temple, the statue of Jupiter Olympius was placed on the altar, and the abomination of desolation was seen in the house of God. After three years, Judas Maccabæus went up to Jerusalem, purified the temple, and restored the sacrifices. In the following year B.C. 164, Antiochus Eupator laid siege to Jerusalem, but a peace being concluded, he was received into the city by Judas Maccabæus; however, he violated his oath, and caused the wall between the temple and the citadel, which defended the former from the attacks of the Syrians, to be utterly demolished. In the year B.C. 143, Simon Maccabæus fortified Jerusalem, by erecting high and strong towers on the walls; and he took and destroyed the citadel, which was then in the hands of the Syro-Macedonians, and which had kept Jerusalem 26 years dependent on the king of Syria. John Hyrcanus succeeded his father Simon in the year B.C. 135, and soon after Antiochus Sidetes, king of Syria, declared war against him, besieged Jerusalem, destroyed the walls of the city, and then retired, in the year B.C. 63, Pompey, having subdued Syria, laid siege to Jerusalem, and made Judea tributary to the Roman empire. But though he and some of his officers entered into the most holy places of the temples, they took nothing away. During the reign of Herod the Great, Jerusalem was much enlarged and embellished. He constructed a superb royal palace, a theatre, and an amphitheatre, for the purpose of celebrating various games in honour of Augustus. He also projected the design of rebuilding the temple, or at least of enlarging that which had been erected after the return of the Jews from the Babylonish captivity, and having begun the work in the 18th year of his reign, he completed it in eight years. (See TEMPLE.) Under the reign of the emperor Tiberius, Jerusalem was made signal in all future ages by the death and resurrection of our Lord and Saviour JESUS CHRIST, who was unjustly accused and condemned, and crucified on mount Calvary. (See CALVARY.) It is needless to recite any of those trivial circumstances that pertain to this city, between the event now mentioned, and its destruction by Titus. The country of Judea, and Jerusalem in particular, had been reduced to a wretched state by contending factions, and by resistance to the oppression of Roman governors. The dissatisfaction that prevailed at length terminated in the desolation and carnage of war. This was commenced, according to Josephus, (Ant. l. 20. xi. 1.) in the second year of the government of Gessius Florus, who succeeded Albinus, the successor of Porcius Festus, mentioned in the Acts of the Apostles, in the month of May, in the 12th year of the emperor Nero, and the 17th year of Agrippa, mentioned Acts, xxv. and xxvi, that is, in the month of May, A.D. 66. The emperor Nero entrusted the conduct of it, on the part of the Romans, to his general Vespasian, who, accompanied by his son Titus, and a powerful army, arrived in Syria, A.D. 67. Vespasian, soon after succeeding to the

empire, committed the prosecution of the war against the Jews to his son Titus, who joined the army, amidst the acclamations of the populace, A.D. 70. Jerusalem was in the most woeful condition when Titus undertook the siege of it, April 14th, A.D. 70. Having made himself master of the first wall, May 4th, he caused a great part of it towards the north to be demolished. His favourable offer of terms to the besieged was rejected; and five days after he took the second wall, and after a repulse, he gained possession of it again in four days, and demolished the part that remained of it in the northern quarter. Failing to batter down the third wall, Titus renewed his proposal to the inhabitants, and for this purpose employed Flavius Josephus, who had been taken prisoner, and who, after having received his liberty, had attached himself to the Roman camp. The majority of the people were inclined to accept the easy conditions that were proposed; but they were resisted by some zealots, and Josephus was treated with every mark of indignity and reproach. Titus was enraged, and his clemency was changed into unjustifiable severity. He ordered the hands of those who had sought shelter in his camp to be cut off, and in this mutilated state sent them back to the city; and others were crucified in the sight of their countrymen. Within the city famine began to make dreadful havoc, so that parents were obliged to satisfy their hunger by devouring the flesh of their own children; an action which appeared so unnatural to the Roman general, that he swore he would bury the remembrance of it under the ruins of Jerusalem. Titus accelerated by all the means in his power the operations of the siege, and at length, applying his battering rams to the third wall, or the wall enclosing the fortress, he made himself master of the tower of Antonia. The Romans wished to get possession of the temple without destroying it; but a soldier threw a burning torch amidst a quantity of combustible materials in the northern part of it, and thus set it on fire. The temple was burnt on the 18th day of the month of August, A.D. 70, the same day and month, on which it had been burnt by the king of Babylon. The Romans with concern, and the inhabitants with the most poignant sorrow, perceived this building reduced to ashes; and very soon, *viz.* on the 8th day of September, A.D. 70, and in the 2d year of the reign of Vespasian, the city of Jerusalem fell into the hands of Titus. It was then given up to be plundered by the soldiers, and most of its inhabitants were put to the sword. In conformity to the orders of Titus, the city was destroyed to its foundations, and even the ruins of the temple were demolished. A plough-share, it is said, was drawn over the consecrated ground, as a sign of perpetual interdiction. According to Josephus, whose account of the Jewish war, and of the siege and capture of Jerusalem, is in almost every one's hands, the number of prisoners taken during the whole war was 97,000, and that the number of those who perished in the siege amounted to 1,100,000; but Tacitus, who lived in the first century, in the time of Vespasian and Titus, heard it reported, that the number of the besieged, including those of every age and sex, was only 600,000. Notwithstanding the destruction of their city, many Jews remained in the town or in its vicinity, and erected new buildings for their accommodation; but they paid tribute to the Romans, and became subject to their laws. It is a circumstance that deserves to be recorded, that, as we have good reason to believe, no Christians were involved in the miseries of the last siege of Jerusalem. They are supposed to have left it before the siege began. Some went to Pella, as Eusebius mentions (H. E. l. iii. c. 5), a city on the other side of the Jordan. Others might go elsewhere, into Asia, or

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other remote countries, where they could get a settlement. St. John, it is supposed, left Judea, and went to Ephesus in the year 66, or about that time, just before the war commenced. Some Jews of Jerusalem, and other parts of Judea, might go with him, or follow him afterwards. And, under his direction and assistance, they might procure a comfortable settlement in places not far from him. After the termination of the war in Judea, it is supposed that the Christian believers, who had retired into the country beyond Jordan, returned to Jerusalem, and formed a church there.

In process of time, the Jews incensed Adrian by their turbulent disposition, and he resolved to level the city of Jerusalem with the ground, that is, those buildings which the Jews had erected, to destroy three towers that were left by Titus for the convenience of the Roman garrison, and to sow salt in the ground on which the city had stood. Thus did Adrian, whatever were his motives, literally fulfil the prediction of our Saviour, that neither in the city nor the temple should one stone be left upon another. This final destruction took place 47 years after that of Titus. The further attempts of Adrian are recited under the article *ÆLIA Capitolina*. For an account of the honours paid to Jerusalem and its vicinity by the mother of Constantine the Great, see *CALVARY*, *Invention of the Cross*; and *HELENA*. For Julian's attempt to rebuild the temple at Jerusalem, see *JULIAN* and *TEMPLE*. The emperor Justinian erected a magnificent church to the Virgin Mary at Jerusalem. For the foundation of this church a level was formed, by raising part of a deep valley to the height of the mountain. The stones of a neighbouring quarry were hewn into regular forms; each block was fixed on a peculiar carriage drawn by 40 of the strongest oxen, and the roads were widened for the passage of such enormous weights. Lebanon furnished her loftiest cedars for the timbers of the church; and the seasonable discovery of a vein of red marble supplied its beautiful columns, two of which, the supporters of the exterior portico, were esteemed the largest in the world. To complete the celebrity of this church, the holy vessels of the Jewish temple, recovered by Belisarius after their long peregrination, says Gibbon, were deposited in it.

In the year 614, the Persians, under the command of Chosroes, took Jerusalem by assault. The sepulchre of Christ, and the stately churches of Helena and Constantine, were consumed, or at least damaged by the flames; the devout offerings of 300 years were rifled in one sacrilegious day; the patriarch Zachariah, and the "true cross" were transported into Persia; and the massacre of 90,000 Christians is imputed to the Jews and Arabs, who swelled the disorder of the Persian march. However, in 628, Jerusalem and the holy cross were restored to Heraclius, who banished from the city all the Jews, and prohibiting their coming within three miles of it. After the battle of Yermuk in 626, and a siege of four months, Jerusalem surrendered to the Saracens, under the command of the caliph Omar, and it remained for several centuries under the government of the caliphs, who were Mahometans, and of course the prevailing religion was Mahometan. The Turks, after having reduced Damascus by fire and sword, took possession of Jerusalem A.D. 1076; and under the government of these masters, the condition of the Christians was very deplorable; the pilgrims, who were numerous from all parts of the world, were grievously insulted and oppressed by the Turkmen; the pathetic tale of their sufferings excited the millions of the west to march under the standard of the cross to the relief of the Holy Land. "A nerve," says Gibbon, "was touched of exquisite feeling; and the sensation vibrated to the heart of Europe." The Turks were constrained to

surrender Jerusalem to the caliph of Egypt; but after a short possession he was obliged to deliver it to the Crusaders. See *CROISADE*.

Jerusalem, long so famed in history for its sanctity and its opulence, is now reduced to a poor, thinly inhabited town, of at most three miles in circuit. It is called by the Turks "Cudsembaric" and "Coudsheriff." The Orientals, however, never call it by any other name than "Elkods," the Holy: sometimes adding the epithet "el sherif," the noble. The ground between Rome and Jerusalem is rugged, mountainous, and barren. When its situation is considered, destitute of water, and surrounded by dry channels of torrents and steep heights, we may well be astonished at its ancient greatness. It is seated on an eminence, but surrounded by others of greater height; and its walls, which remain tolerably perfect, and constructed of a reddish stone, form the chief object in the approach. The best view of Jerusalem is from the mount of Olives, on the east of the city. In front is the chief mosque, which, according to the tradition of the Mahometans, contains the body of Moses; from the same mount may be discovered, on a clear day, the "Dead Sea," nearly S.E., reflecting a whitish gleam; the intervening region appearing very rocky. The "tombs of the kings," as they are called, are worthy of notice, being of Grecian sculpture on a hard rock. There are several ornaments on the sarcophagi of foliage and flowers, and each apartment is secured with a massive pannelled door of stone. These tombs, which have been frequently ravaged in search of treasure, are supposed to have been constructed in the time of Herod and his successors, kings of Judea. The inhabitants are partly Christians and partly Mahometans, and they are actuated by a spirit of discord and hatred towards one another. From the respect which they profess for the sacred places contained in this city, one would be apt to imagine that they were a very devout people; but Volney represents them as well deserving the reputation of the vilest people in Syria, not excepting even those of Damascus. He supposes their number to amount to 12 or 14,000: Browne states the present population of Jerusalem at from 18 to 20,000. The Christian women, who abound in Jerusalem, wear white veils, as a distinction from the Mahometan, who wear other colours. Arabic is the general language, except among the Armenians and Greeks. Jerusalem has had from time to time governors of its own, with the title of Pachas: but it is now governed by an aga, motfallam, or deputy governor, appointed by the pacha of Damascus, who is allowed so few troops, that all Palestine may be regarded as in the power of the Arabs. The motfallam, availing himself of the disposition to make pilgrimages to Jerusalem and its vicinity, which has prevailed for many ages, and which still continues, farms his government, and receives the revenues arising from the Miri, the customs, and especially from the follies of the Christian inhabitants. In order duly to appreciate the value of this last article, it must be understood, that the different communions of Schismatic and Catholic Greeks, Armenians, Copts, Abyssinians, and Franks, mutually envying each other the possession of the holy places, are continually endeavouring to outbid one another in the price they offer for them to the Turkish governors. They are constantly endeavouring to obtain some privilege for themselves, or to take it from their rivals; and each sect is perpetually informing against the other for irregularities. Hence proceed those hatreds, and that eternal jangling which prevail between the different convents, and the adherents of each communion. Every dispute yields profit to the Turks; and also perquisites for the motfallam, which annually amount to upwards of 100,000 piastres.

Every pilgrim pays him an entrance fee of ten piaſtres, and another for an eſcort for the journey to the Jordan, beſides other ſums as fines for miſbehaviour during the ſtay of the pilgrims, and duties on the exportation of certain ſingular commodities from Jeruſalem, ſuch as beads, relics, ſanctuaries, croſſes, paſſions, agnus deus, ſcapularies, &c. of which near 300 cheſts are ſent off annually. The fabrication of theſe utenſils of piety procures ſubſiſtence for the greateſt part of the Chriſtian and Mahometan families of Jeruſalem and its neighbourhood; men, women, and children being employed in carving and turning wood and coral, and embroidering in ſilk, with pearls, and gold and ſilver thread. The convent of the Holy Land, alone, lays out annually to the amount of 50,000 piaſtres in theſe wares; and thoſe of the Greeks, Armenians, and Copts, taken together, pay a larger ſum. Theſe commodities, exported to Turkey, Italy, Portugal, and eſpecially to Spain, produce a return of conſiderable ſums, either in the form of alms or payments. To theſe the convents join another article not leſs lucrative, *viz.* “the viſits of the pilgrims.” It is well known that at all times the devout curioſity of viſiting the “holy places” has occaſioned Chriſtians of every country to reſort to Jeruſalem. It was formerly taught by the miniſters of religion as indiſpenſibly neceſſary to ſalvation, and this pious zeal pervading all Europe, gave riſe to the cruſades. (See *CROISADES.*) Since their unfortunate iſſue, the zeal of Europeans has cooled, the number of pilgrims has diminiſhed, and they are now reduced to a few Italian, Spaniſh, and German monks; but this is not the caſe with the Orientals, their prieſts and monks, deriving advantage from this fervour, do not ceaſe to promote it. The Greeks, eſpecially, declare that “the pilgrimage enſures plenary indulgence, not only for the paſt, but even for the future; and that it abſolves not only from murder, inceſt and pederſty; but even from the neglect of faſting, and the non-obſervance of feſtivals, which are far more heinous offences.” Accordingly, every year a crowd of pilgrims of both ſexes, and of all ages, ſet out from the Morea, the Archipelago, Conſtantinople, Anatolia, Armenia, Egypt, and Syria, the number of whom, in 1784, amounted to 2000. This zeal, however, is found to be very expenſive: ſince the moſt moderate pilgrimage never coſts leſs than 166*l.* and ſome of them, by means of offerings, amount to 250*l.* Yafa is the port where the pilgrims diſembark; they arrive in November, and repair without delay to Jeruſalem, where they remain, in inconvenient but very expenſive lodgings, till after the feſtival of Eaſter. The pilgrims muſt alſo be at great charge in paying for maſſes, ſervices, and exorcifms, and alſo in the purchaſe of crucifixes, beads, &c. On Palm Sunday they go to purify themſelves in the Jordan, which is an expenſive expedition. One year with another, it produces to the governor 15,000 Turkiſh ſequins, or 4687*l.* When Eaſter is paſt, each perſon returns to his own country, proud of being able to rival the Mahometan in the title of pilgrim, and bearing imprinted on their hands, wrifts, or arms, figures of the croſs or ſpear, with the cypher of Jeſus and Mary. The difference between theſe two claſſes of pilgrims is, that thoſe of Mecca are called “Hadjes,” and thoſe of Jeruſalem “Mokodſi,” a name formed from that of the city, “El-Kods.” The number of pilgrims who reſide at Jeruſalem for five or ſix months, leave behind them a ſum not leſs than 62,500*l.* (See *PILGRIMAGE.*) Theſe pilgrims draw together to Jeruſalem a ſwarm of mendicants; and yet notwithstanding the wealth accumulated and expended in this city under the influence of prieſtcraft and ſuperſtition, the church of the Holy ſepulchre, the glory of former times, and the monument of Helena’s piety, is ſo

much neglected, that the ſnow falls into the middle of it: the beams, ſaid to be cedar, are falling, and the whole roof is in a ruinous ſtate. The Armenian convent is ſaid to be elegant, and ſo extenſive as to furniſh accommodation for no leſs than 1000 pilgrims. When Mr. Browne viſited this city in February 1797, a very deep ſnow lay upon the ground for 12 or 13 days. The Catholic convent has a large ſubterraneous ciſtern, into which the ſnow, melting from the roof and other parts, is conveyed, and ſupplies the monks with water for a great portion of the year. *Anc. Un. Hiſt.* vol. ii. *Calmet’s Dict. Bible.* *Gibbon’s Rom. Hiſt.* vol. iv, vii. viii. ix. x. *Volney’s Trav.* vol. ii. *Browne’s Travels,* quarto.

JERUSALEM, a poſt-town of America, in the county of Ontario, and ſtate of New York; lying on the W. ſide of Seneca lake, and containing about 50 families, and 1219 inhabitants; 30 miles N.E. by N. of Bath.

JERUSALEM, or *Funks-town*, a town of Maryland, in Waſhington county, about 2½ miles S.W. of Elizabeth town; containing about 50 dwellings and a German church.—Alſo, a poſt-town in Southampton county, Virginia; 250 miles from Waſhington.

JERUSALEM, *Old.* See *FALLEN City.*

JERUSALEM, a town of the duchy of Courland; 44 miles E.S.E. of Seelburg.—Alſo, a town of the duchy of Stiria, celebrated for its wine; four miles S.S.W. of Friedaw.

JERUSALEM, *New*, in *Theology.* See *MILLENNIUM.*

JERUSALEM *Artichoke*, in *Botany.* See *HELIANTHUS.*

JERUSALEM *Coruſſip.* See *PULMONARIA.*

JERUSALEM *Croſs.* See *LYCHNIS.*

JERUSALEM *Oak.* See *CHENOPodium.*

JERUSALEM *Sage.* See *PHILOMIA.*

JERUSALEM, *Sage of.* See *PULMONARIA.*

JERUYO, in *Geography*, a ſingular mountain, ſituated in the valley of Urecho, in Mexico or New Spain; which before the year 1760 was a ſmall hill, bearing a ſugar plantation, but from September in that year it has continued to emit fire and burning rocks, that have formed themſelves into three high mountains, whoſe circumference in 1766 was nearly ſix miles. At the eruption the aſhes were forced to the diſtance of 150 miles.

JERXHEIM, a town of the principality of Wolfenbuttel; 13 miles E.S.E. of Wolfenbuttel.

JESAN, a delightful mountain of Japan, near the lake of Oitz; which is eſteemed ſacred, and, according to *Kæmpfer*, is ſaid to preſent not leſs than 3000 temples.

JESAW, a town of Pruffia, in the circle of Natangen; 10 miles S. of Konigsberg.

JESEN, in *Ichthyology.* See *JENTLING.*

JESENITZA, in *Geography*, a town of Croatia; 35 miles N.W. of Bihaçs.

JESERNICO, a town of Italy, in the country of Friuli; 12 miles W. of Palma la Nuova.

JESERO, a ſingular lake in the iſle of Cherfo, which only diffuſes its waters every fifth year.

JESHANA, in *Scripture Geography*, a city of Ephraim (2 Chron. xiii. 19.), probably the ſame with *Zin* (Numb. xxxiv. 4.), placed by *Eufebius* and *Jerom* ſeven miles N. of Jericho.

JESHIMON, probably the ſame with *Hefmona*, *Aſcmona*, or *Eſcmona*, a city in the wilderneſs of Maon, belonging to Simeon, lying in the S. of Paleſtine, and even in Arabia Petraea, 1 Sam. xxiii. 24.

JESI, in *Geography*, a town of the marquiſate of Ancona; the ſee of a biſhop, containing three churches and ten convents;

convents; 16 miles W.S.W. of Ancona. N. lat. 40° 31'. E. long. 13° 10'.

JESILBASCH, *Green-head*, a name of reproach which the Persians give to the Turks, because their emirs wear a green turban.

JESIORO, in *Geography*, a town of Poland, in the palatinate of Kiev; 56 miles S.S.W. of Czyrkassky.

JESSAMINE, in *Botany*. See **JASMINUM**.

JESSAMINE, in *Geography*, a county of Kentucky, in America; containing 5438 inhabitants, of whom 1553 are slaves. The chief town is Nicholasville.

JESSANT, formed from the obsolete French *jeffer*, to rise, or *spring out*, in *Heraldry*, is applied to a fleur-de-lis, or the like figure, seeming to spring or shoot out of some other charge. He bears sable; three leopards' heads; jessant, fleurs-de-lis, or.

JESSE, a large brass candlestick, with many sconces hanging down in the middle of a church or choir. This invention was first called *jesse*, from the similitude of the branches to those of the *arbor jesse*. This useful ornament of churches was first brought over into this kingdom by Hugh de Flory, abbot of St. Austin's, in Canterbury, about the year 1100.

JESSELMERE, in *Geography*, a town of Hindoostan, in the circle of Bickaneer; 60 miles W. of Bickaneer. N. lat. 27° 28'. E. long. 72° 51'.

JESSEN, a town of Saxony, on the Elster; 10 miles E.S.E. of Wittenberg. N. lat. 51° 48'. E. long. 13° 3'.

JESSES denote ribbons hanging down from garlands and crowns; also the short straps of leather fastened to a hawk's legs, and so to the vervels; and birds, in *Heraldry*, are said to be *jeffed*, when these jesses are of a different tincture from the other parts.

JESSIMA, in *Geography*, one of the islands of Japan.

JESSNITZ, a town of Germany, in the principality of Anhalt, on the Muldau; nine miles S. of Dessau. N. lat. 51° 42'. E. long. 12° 20'.

JESSO, **JEDSO**, or *Yedso*, a large island in the North Pacific ocean, N. of Nippon, which having received some Japanese colonies, is generally regarded as subject to Japan; but, being inhabited by a savage people, is rather considered as a foreign conquest than as a part of this civilized empire. The inhabitants live chiefly on fish and game. This island is divided by a narrow strait, about 20 miles broad, from the island of *Segalian*, or *Tchoka*, which see. N. lat. 42° to 45°. E. long. 146° 10' to 147° 10'.

JESSORE, a town of Bengal; 54 miles N.E. of Calcutta. N. lat. 23° 7'. E. long. 89° 16'.

JESTING, or *Concise Wit*, as distinguished from continued wit or *humour* (which see), lies either in the thought, or the language, or both. In the first case it does not depend upon any particular words or turn of the expression. But the greatest fund of jests lies in the language, *i. e.* in tropes or verbal figures; those afforded by tropes consist in the metaphorical sense of the words, and those of verbal figures principally turn upon a double sense of the same word, or a similitude of sound in different words. The third kind of jokes, which lie both in the sense and language, arise from figures of sentences, where the figure itself consists in the sense, but the wit turns upon the choice of the words. Ward's *Orat.* vol. ii. Lect. 40. See **WIT**.

JESUATES, **JESUATÆ**, an order of religious, otherwise called *Apostolical Clerks*, or *Jesuates of St. Jerom*.

They were founded by John Colombini in 1368, and approved of by Urban V. in 1369, at Viterbo; where he himself gave, to such as were present, the habit they were to wear. They followed the rule of St. Augustin,

and were ranked by Pius V. among the order of Mendicants.

They were called *Jesuates*, because their first founders had the name of Jesus continually in their mouths: to which they added the name of St. Jerom, because they chose that saint for their protector.

For two centuries the *Jesuates* were mere lay-brothers; but in 1606, Paul V. gave them leave to enter into holy orders. In most of their houses they were employed in pharmacy, distributing their medicines gratis; others practised distillation, and sold aqua vitæ; which occasioned their being called *aqua-vitæ mongers*.

Being very rich in the state of Venice, that republic solicited their suppression, and obtained it of Clement IX. in 1668, their effects being employed towards supporting the expences of the war in Candia.

JESUITISSÆ, in the *Romish Church*, an order of nuns which followed the rule of the Jesuits, which was suppressed by pope Urban VIII. in the year 1630.

JESUITS, an order of religious, founded by Ignatius Loyola, a Biscayan military gentleman, of a fanatical and ambitious spirit, called also *the Society of Jesus*.

They are also sometimes called *Loyalites*, and sometimes *Inigbists*, from the Spanish name of their founder, which was *Inigo de Guipuscoa*.

This order, which was the most political and best regulated of all the monastic orders, and from which mankind have derived more advantages, and received greater hurt, than from any other of these religious fraternities, has rendered itself very considerable by its missions into the Indies, and by its other employments relating to the study of the sciences, and the education of youth. The council of Trent calls them "Regular Clerks of the Company of Jesus."

In the year 1538, Ignatius, having assembled ten of his companions at Rome, chosen mostly out of the university of Paris, proposed to them to make a new order. After this, he presented the plan of his institution, suggested, as he gave out, and his followers still teach, by the immediate inspiration of heaven, to the Roman pontiff, Paul III. who appointed a committee of cardinals to examine it; upon whose report, that the establishment was unnecessary as well as dangerous, Paul refused to approve it. This opposition was principally urged by the learned and worthy cardinal Guidiccioni.

This opposition was vanquished by the dexterity of Ignatius, who proposed, that besides the three vows of poverty, chastity, and monastic obedience, the members of this society should take a fourth vow of obedience to the pope; binding themselves to go whithersoever he should command, for the service of religion, and without requiring any thing from the holy see for their support. However, Ignatius, and his company in the same charter of their order in which they declare their implicit and blind allegiance to the court of Rome, promise a like implicit and unlimited allegiance to the general of their society. The pontiff, perceiving this institution to be an object of consequence, confirmed it under the name of the "Company of Jesus" by a bull in 1540; and appointed Ignatius Loyola to be the first general of the order. Loyola was originally an illiterate soldier, and is supposed by many to have been only a flexible instrument in the hands of able and ingenious men, who made use of his fortitude and fanaticism to answer their purposes, and persons much more learned were employed to compose the writings which bear his name. Geddes's *Traacts*, vol. iii. p. 429.

By this bull the number was restrained to sixty; but that restriction

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restriction was taken away two years afterwards by another bull. The order has since been confirmed by several succeeding popes, who have added many new rights and privileges to it.

In less than half a century after its institution, the society obtained establishments in every country that adhered to the Roman Catholic church; in the year 1608, the number of Jesuits had increased to 10,581. In the year 1710, the order possessed 24 professed houses; 59 houses of probation; 340 residencies; 612 colleges; 200 missions; 150 seminaries and boarding-schools; and consisted of 19,998 Jesuits.

The constitution and laws of the society were perfected by Laynez and Aquaviva, the two generals who succeeded Loyola, men far superior to their master in abilities, and in the science of government. Several circumstances concurred to the rapid progress and extensive influence of the Jesuits. They were taught to consider themselves as formed for action, and bound to exert themselves continually, as soldiers in the service of God, and of the pope, his vicar on earth. And that they might have full leisure for their active service, they were totally exempted from those functions, the performance of which is the chief business of other monks. They were required to attend to all the transactions of the world; to study the dispositions of persons in high rank, and to cultivate their friendship; and by the constitution as well as genius of the order, a spirit of action and intrigue was infused into all its members. Besides, the form of government of this order was peculiar: Loyola, full of the ideas of implicit obedience, which he had derived from his military profession, appointed that the government of this order should be purely monarchical. A general, chosen for life by deputies from the several provinces, possessed power that was supreme and independent, extending to every person and to every case. He, by his sole authority, nominated provincials, rectors, and every other officer employed in the government of the society, and could remove them at pleasure. In him was vested the sovereign administration of the revenues and funds of the order. Every member belonging to it was at his disposal; and by his uncontrollable mandate, he could impose upon them any task, or employ them in whatsoever service he pleased. To his commands they were required to yield not only outward obedience, but to resign to him the inclinations of their own wills, and the sentiments of their own understandings. There is not in the annals of mankind any example of such a perfect despotism, exercised not over monks shut up in the cells of a convent, but over men dispersed among all the nations of the earth. It is carefully provided, that the general should be perfectly informed with respect to the character and abilities of his subjects. Every novice, who offered himself a candidate for entering into the order, was obliged to manifest his conscience to the superior, or to a person appointed by him every six months: each member was likewise enjoined to observe the words and actions of the novices, and to disclose every thing of importance to the superior. The provincials and heads of the several houses were also obliged to transmit to the general, regular, frequent, and minute reports concerning the members under their inspection. These reports were digested and arranged in registers, by which the general might easily survey the state of the society in every corner of the earth; observe the qualifications of its members, and choose proper instruments for any necessary service. The number of these reports received annually by the general was 6584, which divided by 37, the number of provinces in the order, gives 177 reports concerning the state of each province transmitted annually to Rome. The general also received, by the constitution of

the order, an account of the civil affairs of the country where his subjects resided; so that he was furnished with full information concerning the transactions of every prince and state in the world. The Jesuits, from their first institution, considered the education of youth as their peculiar province; and before the expiration of the 16th century, they had obtained the chief direction of this business in every Catholic country in Europe. They had also become the confessors of almost all its monarchs; they were the spiritual guides of almost every person eminent for rank or power; and they possessed the highest degree of confidence and interest with the Papal court, as the most zealous and able champions for its authority. The order, notwithstanding the vow of poverty which they contrived to elude, acquired ample possessions in every Catholic country. Besides the sources of wealth common to all the regular clergy, they obtained, under a pretext of promoting the success of their missions, and of facilitating the support of their missionaries, a special licence from the court of Rome to trade with the nations which they laboured to convert. In consequence of this, they engaged in an extensive and lucrative commerce, both in the East and West Indies: they also aimed at obtaining settlements, and accordingly acquired possession of a large and fertile province in the southern continent of America, and reigned as sovereigns over some hundred thousand subjects.

The progress and influence of the Jesuits were likewise much promoted by their mutual union for the good of the common cause; by their reputation for learning and science, in which they excelled all the other orders, though M. d'Alembert says, that the order has never produced one man, whose mind was so much enlightened with sound knowledge as to merit the name of a philosopher: by the severity of their discipline and regularity of their conduct and manners; by propagating a system of relaxed and pliant morality, which accommodated itself to the passions of men, justified their vices, tolerated their imperfections, and authorized almost every action, which the most audacious or crafty politician would wish to perpetrate. So that the abbé Boileau says of them, they are a people who lengthen the creed and shorten the decalogue; by extending the jurisdiction and absolute power of the court of Rome; and by the zeal which they have manifested in combating the opinions and checking the progress of the Protestants.

The end principally proposed by this order was to gain converts to the Romish church; with which view they dispersed themselves in every country and nation, and with amazing industry and address pursued the end of their institution. No difficulty so great that they could not surmount, no danger so imminent that they would not undergo; and, as some say, no crimes so shocking that have not been perpetrated by them for the service of their cause.

Of all the Jesuits, who distinguished themselves by their zealous and laborious attempts to extend the limits of the church, none acquired a more shining reputation than Francis Xavier, commonly called "The Apostle of the Indians." He sailed for the Portuguese settlements in India in 1522, and soon diffused the knowledge and profession of the popish religion over a great part of the continent and neighbouring islands. In 1529 he laid the foundation of a considerable church in Japan; against which, however, a violent persecution was commenced in 1615, and lasted several years, and terminated in the utter extirpation of Christianity, and an edict forbidding all Europeans, a few Dutch merchants excepted, to approach the Japanese dominions; and having embarked for China, he died in 1552, within sight of it. Others, after his death; and particularly Ricci,

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Ricci, an Italian, penetrated into China, and established churches, some remains of which subsist to this day. Robert de Nobili is much celebrated by the Jesuits on account of his success in proselyting the Brachmans: for the method he used, see BRACHMANS. The Jesuits are charged by the Jansenists and Dominicans with many fraudulent practices in their attempts to propagate Christianity in China; and particularly with endeavouring to persuade the Chinese, that the doctrine of Confucius and that of the gospel were not essentially different, and that Jesus Christ had been known and worshipped in their nation many years ago. Ricci allowed the Chinese converts to retain the profane customs and the absurd rites of their Pagan ancestors; but his opinion was condemned by the Dominicans and Franciscans. This difference laid the foundation of a long and violent contest. Innocent X. in 1645, pronounced sentence in favour of the Dominicans; but, about eleven years after, Alexander VII. granted the Chinese the indulgence proposed by Ricci. Complaints were renewed by the Dominicans in 1661, and again in 1674, under the pontificate of Innocent XI.; and the dispute was carried on both in Europe and China, from the year 1684, till the question was decided to the disadvantage of the Jesuits in the year 1704, by Clement XI.; but this edict was mitigated in 1715. It is well known that the inquisition erected by the Jesuits at Goa, where the body of Xavier lies interred, and is worshipped with the highest marks of devotion, and the penal laws, whose terrors they employed so freely in propagation of the gospel, contributed much more than their arguments and exhortation, which were but sparingly used, to engage the Indians to embrace Christianity.

About the beginning of the 17th century, the Jesuits obtained admission into the fertile province of Paraguay, in South America, where they found the inhabitants in a barbarous and savage state; they began with instructing and civilizing them; cultivating amongst them the arts and manufactures, and accustoming them to the blessings of society, security, and order. By this method they secured their esteem and confidence; and a few Jesuits presided over some hundred thousand Indians. However, it appears from the most credible relations, that they soon changed their views from the propagating of Christianity, to schemes of insatiable avarice and boundless ambition: and they have sent yearly to the members of their order, in Europe, immense quantities of gold, drawn from several American provinces where they have power and property, but chiefly from Paraguay, which belonged to them only: and it is evident, from later discoveries, which have proved the ruin of the Jesuits in Spain and Portugal, that they had established an independent empire in this province, subject to their society alone, and which, by the superior excellence of its constitution and police, could scarcely have failed to extend its dominions over all the southern continent of America. They cut off every kind of communication between the Spaniards and Portuguese in the adjacent settlements, and the Indians; inspired the latter with hatred and contempt of these nations; industriously avoided giving the Indians any knowledge of the Spanish, or other European language; instructed them in the art of war; formed them into bodies of cavalry and infantry, and provided them with artillery and magazines stored with all the implements of war. Such was the state of things when, in the year 1750, the courts of Madrid and Lisbon entered into a treaty for fixing the limits of their respective dominions in South America. In the execution of the treaty, in the year 1752, the Jesuits demurred; and a war ensued between the Spanish and

Portuguese on one side, and the Indians, animated by the Jesuits, on the other; which was the real and original cause of the disgrace of the Jesuits at the court of Portugal.

The Jesuits have been justly charged with inculcating the most licentious and dangerous maxims with regard to morality and religion: such are the following extracted from their writings. That persons truly wicked and void of the love of God, may expect to obtain eternal life in heaven, provided that they be impressed with a fear of the divine anger, and avoid all heinous and enormous crimes through the dread of future punishment: that those persons may transgress with safety, who have a probable reason for transgressing, *i. e.* any plausible argument or authority in favour of the sin they intended to commit: that actions intrinsically evil, and directly contrary to the divine laws, may be innocently performed, by those who have so much power over their own minds, as to join, even ideally, a good end to this wicked action, or to speak in their style, who are capable of directing their intention aright: that philosophical sin is of a very light and trivial nature, and does not deserve the pain of hell: by philosophical sin they mean an action contrary to right reason, which is done by a person who is either absolutely ignorant of God, or does not think of him during the time this action is committed: that the transgressions committed by a person blinded by the seduction of lust, agitated by the impulse of tumultuous passions, and destitute of all sense and impression of religion, however detestable and heinous they may be in themselves, are not imputable to the transgressor before the tribunal of God; and that such transgressions may often be as involuntary as the actions of a madman: and that the person who takes an oath, or enters into a contract, may, to elude the force of the one, and the obligation of the other, add to the form of words that express them, certain mental additions and tacit reservations. Some of these maxims were condemned by a public edict of pope Alexander VII. in 1659; and that relating to philosophical sin met with the same fate in 1690, under the pontificate of Alexander VIII. Neither of these bulls are to be found in the "Bullarium Pontificum;" but they are industriously preserved by the Jansenists and Dominicans. The corrupt morality of the Jesuits was humourously and learnedly attacked by the famous Pascal, in his work, entitled "Les Provinciales, ou Lettres écrites par Louis de Montalte, à un Provincial de ses Amis et aux Jesuits, sur la Morale et la Politique de ces Pères." The Jesuits, however, obtained a sentence against the Provinciales, by which they were condemned to be burnt publicly at Paris. Another excellent book, by Perrault, published at Mons, in 3 volumes 8vo., in the year 1702, entitled "La Morale des Jesuits, extrait fidèlement de leurs Livres, imprimés avec la Permission et l'Approbation des Superieurs de leur Compagnie, par un Docteur de Sorbonne," was burnt at Paris, in the year 1670, at the request of the Jesuits. The famous Arnauld, with some of his Jansenist brethren, have undertaken to prove, that the Jesuits reduced their pernicious maxims to practice, in a celebrated work, entitled "La Morale Pratique des Jesuits," consisting of eight volumes 8vo., the second edition of which was published at Amsterdam in the year 1742. For an account of the controversy between the Jesuits and Jansenists, see JANSENISTS.

The Jesuits had no particular habit; but changed and accommodated it to times and occasions. The order consisted of five different classes; *professed fathers, spiritual coadjutors, approved scholars, lay brothers*, called also *temporal coadjutors*, and *novices*. Some writers make only three classes, *viz.* the *professed members, the scholars, and the novices*. Some add

add a sixth class, under the title of *adjuncts*, which they say was numerous, and was incorporated with the other classes, and disguised under different sorts of apparel.

The *professed fathers*, which made the body of the company, took the three solemn vows of religion publicly, and to these add a special vow of obedience to the head of the church, as to what regards missions among idolaters, heretics, &c.—The *spiritual coadjutors* also made public vows of chastity, poverty, and obedience; but omitted the fourth relating to missions.—*Approved scholars* were those who, after two years novitiate, had been admitted, and had made three vows of religion; not solemn; indeed, but yet declared. These were in the way to become professed, or *spiritual coadjutors*, according as the general thought fit. These degrees, especially that of professed, were never conferred till after two years novitiate, and seven years study, seven of regency, a third year of novitiate, and thirty-three years of age; the age at which our Saviour is supposed to have been crucified. The vows of the scholars were absolute on their side, but only conditional on the side of the order; the general having it in his power to dispense with them.

The order was divided into *assistances*, the assistances into *provinces*, and the provinces into *houses*. It was governed by a general, who was perpetual and absolute. He resided at Rome, and was elected by a general congregation of the order. He had with him five persons, who were, as it were, his ministers. They were called assistants, and bore the name of the kingdom or country to which they belonged, and by which they were appointed; *viz.* of Italy, France, Spain, Germany, and Portugal. To these belonged the care of preparing the matters of their respective assistances, and of putting them in a method to facilitate their dispatch.

Each province had four kinds of houses, *viz.* *professed houses*, which could have no lands belonging to them; *colleges*, where the sciences were taught; *residences*, where were a number of workmen employed in such offices, as had any immediate relation to preaching, confession, missions, &c.; and houses of *novices*. Among the colleges there were some called *simply colleges*, and others called *seminaries*. These last were set apart for the young Jesuits to go through their courses of philosophy and theology in; the others were for strangers.

Each province was governed by a *provincial*, and each house by a *superior*; who was called *rector* in the colleges, and a *superior* in the other houses. Ignatius regulated the discipline of these houses, and especially of the colleges, by what he had observed in the Sorbonne, while he studied at Paris.

The professed of this order renounced by a solemn vow all preferment, and especially prelacy; and could not receive any, unless enjoined thereto by the pope, under pain of sin. This the pope sometimes did; inasmuch that they have had eight cardinals of their order.

The reader will find, in the preceding part of this article, a brief but comprehensive account of the Jesuits, as to their origin and influence, and the chief causes on which their influence depended, and the nature of their constitution: it remains to direct his views to their decline and actual suppression, in some parts of Europe, where their credit, power, and opulence had at one time arrived to a prodigious height. In France, the assassination of Henry IV. by Jean Châtel, one of their scholars, and the writings of the Jesuit Guignard, in favour of regicide, induced several of the parliaments of the provinces to expel them, as a detestable and diabolical society, the corruptors of youth, and enemies

to the king and state. But they were again favoured by Louis XIII. and cardinal Richelieu, and also by Louis XIV.; in whose reign they obtained the revocation of the edict of Nantes against the Protestants, and succeeded almost to their utmost wishes in suppressing the Janfenists, their inveterate enemies. However, at this period, their affairs seem to have taken a different turn. Father Tellier's violence in destroying the famous Port-Royal, and the universal commotion occasioned by the bull Unigenitus, raised clamours against them, which never subsided till their ruin. The refusal of the sacrament to the Janfenists served also to light up the flame which succeeded, and before it could be extinguished, effected the dissolution of the Jesuits. About this time they also refused, as it is said out of respect to the queen and dauphin, to undertake the spiritual guidance of La Pompadour: and whilst they offended the court by their scruples, they displeased it equally by their intrigues; laying snares for disgracing persons in place, whose only crime was a disregard for their society. They also offended men or letters by their violent declamations against the Encyclopédie, and by their abuse of Voltaire, the author of the *Henriade*. In this situation of the Jesuits, the war broke out between England and France, which involved the society in that famous law-suit, which directly brought on its destruction. Having carried on a considerable commerce in the island of Martinico, and sustained some losses by the war, they wanted to compound their debts with their correspondents in Lyons and Marseilles. These correspondents, looking upon the society in general to be answerable for their brethren in Martinico, addressed themselves to a certain Jesuit in France, demanding justice. This good father, and the Jesuits in general, demurred, and stood trial before the grand-chamber of the parliament of Paris, where they were cast; and not only sentenced to pay the immense sums in litigation, but interdicted for the future all manner of commerce. This sentence led into an examination of their constitution by their own books; which appeared to be contrary to the laws of the kingdom, the obedience due to the king, the safety of his person, and the peace of the state. Besides, the Jesuits were grown rich, insolent, and imperious; and though they professed to have renounced the world, they were found to be tutors, courtiers, merchants, politicians, priests, and wanted nothing less than to be governors and rulers of the earth. These were sufficient motives for suppressing them: the attempt to assassinate the French king in 1757 was charged on the Jesuits: and the actual assassination of the king of Portugal in the following year, which induced the Portuguese minister to drive them all out of the kingdom, in 1759 increased the odium against them. The parliament of Paris having taken a whole year to enquire into the nature of their institution, and news of the capture of Martinico in the mean while arriving, the minister, as M. d'Alembert says, in order to cause a diversion, thought on the expedient of proceeding farther against the Jesuits; and the principal of their college was commanded to obey the arrests of parliament, and to shut up their schools on the first of April, 1762. On the sixth of August following, their institution was unanimously condemned by the parliament, without any opposition on the part of the sovereign; the society was of course dissolved; and their possessions alienated and sold; the other parliaments of the kingdom following sooner or later the example of that of Paris: nay some of them acted with still greater severity, driving them out of their provinces without standing upon forms of law. In general, however, individuals were permitted

mitted to reside in France, on renouncing the society, and taking oaths of allegiance to the king. In a little while after, the king issued an edict, which abolished the society throughout all France. The parliament of Paris, on registering this new edict, ordained the Jesuits to reside each in his own diocese, and to present themselves every six months before the magistrates of the place in which they shall dwell. The same arret forbade them to come within ten leagues of Paris, and banished them at least six leagues from Versailles, but prohibited them not from dwelling at Fontainbleau and Compiègne, where the court resided at least three months in the year. The Jesuits were expelled from Portugal in 1759; from France in 1764; from Spain and Naples in 1767; and their society was totally abolished, in 1773, by pope Clement XIV. See on the subject of this article, Mosheim's *Ecl. Hist.* vol. iii. p. 439. vol. iv. p. 154. vol. v. p. 5. English ed. 8vo. Robertson's *Hist. Ch. V.* vol. iii. p. 104, &c. 8vo. D'Alembert's *Account of the Destruction of the Jesuits*, passim.

JESUITS' Bark. See *Cortex Peruvianus* and *CINCHONA*.

JESUITS' Bark-tree, True, in Botany. See *CINCHONA*.

JESUITS' Bark-tree, False. See *IVA*.

JESUITS' Rocks, in Geography, rocks in the Atlantic, near the coast of Brasil. S. lat. 17° 48'.

JESUL, a river of Hindoostan, being one of the branches of the Chumbul, which joins the main stream between Kotta and Suifopour.

JESUPOL, a town of Poland, in Galicia; 5 miles S. of Halicz.

JESUS, formed of the Hebrew יהושע, *Jehoshuab*, from יושע, and denoting "he that shall save," or "the Saviour," is an appellation appropriated by extraordinary direction, and in a very peculiar and distinguishing manner, to the Son of God and the Saviour of the world; the long predicted and expected Messiah. (Luke, i. 26—38.) This name is frequently used in connection with that of "Christ," for the origin and meaning of which see that article. For the different senses in which the appellations *Son of God* and *Son of Man* have been understood, see those articles respectively. No one who adverts, even in the slightest manner, to the history of our blessed Lord given by the four Evangelists, and to the writings of those who were supernaturally instructed to teach his doctrine, can hesitate for a moment in allowing the propriety of ascribing to him the name of "Jesus" in a super-eminent degree: for though this was a name of Hebrew etymology, and was given, under one form or other, to several distinguished persons among the Jews, it never could be more fitly applied than to him, who, acting under a divine commission, saved mankind from sin and death, and conducts them to knowledge, pardon, holiness, and immortality. See *CHRISTIAN Religion*.

Of the life of Jesus Christ we have an authentic account by the four evangelists, Matthew, Mark, Luke, and John. (See each article respectively, and also *EVANGELISTS*.) The account of these historians chiefly relates to his discourses and conduct after he commenced the exercise of his public ministry. After giving us brief information concerning his birth, lineage, family, and parents, they tell us that he was born at Bethlehem; and that in order to avoid the jealousy and cruelty of Herod, he was taken by his parents into Egypt. Upon the death of Herod he returned to Judea; but excepting one specimen that is recorded of his early wisdom, when he disputed with the Jewish doctors in the temple at the age of 12 years, we know little of his history till he attained the age of about 30 years. Whether

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he was employed in his father's business, during his earlier years, as some have asserted, it is not possible certainly to determine. We know, however, that he increased in wisdom as well as stature, and in favour with God and man. Before he commenced his public ministry, his advent was announced by John the Baptist, and he was baptized by him in the river Jordan. In the course of his subsequent life, which was of no long duration, he maintained a character singularly irreproachable, and in the most perfect degree exemplary. He was active and unwearied in communicating instruction, and in performing miracles, which, in their nature, mode of operation, and general objects, exhibited the unparalleled benevolence of his disposition, and which served to evince, to every unprejudiced observer, his divine origin and mission. In his character and conduct, as well as in his humble and suffering state, he manifested to the world that he was the predicted and long expected Messiah; and the predictions which he himself delivered, served, in their ultimate issue and accomplishment, to manifest the same important and useful purpose. For his assistance in the dissemination of his super-excellent doctrine, and by way of preparing suitable successors, when his life terminated, he appointed apostles and evangelists, who were supernaturally endowed and qualified for the service which was assigned them. After a limited period of service and suffering, a conspiracy was formed against him by the leaders of the Jewish nation; which, after the purposes of his mission, during his life, were fulfilled, took effect by the treachery of Judas Iscariot. At length he was brought before the Sanhedrim; and though Pilate, the Roman governor, testified to his innocence, and wished to preserve his life, the clamour of the populace prevailed. Jesus was condemned to suffer an ignominious death, and the sentence was speedily executed. By his death he accomplished the purposes of the divine wisdom and goodness, as he had previously fulfilled them in the course of his life; and on the third day rose from the dead, agreeably to his prediction, and appeared at sundry times and in various places to his disciples. (See *RESURRECTION*.) Having spent the interval of 40 days in affording satisfactory evidence of his restoration to life to competent witnesses, and in instructing his apostles concerning the nature of his kingdom and the objects of their commission, he visibly ascended to heaven, and, as a further evidence of his continued existence, and of the powers with which he was invested, conferred extraordinary gifts on his apostles, deputed and qualifying them for propagating his religion in the world. See *CHRISTIAN Religion*.

Concerning the person of Jesus Christ, the rank of being he sustained, and the manner of his introduction to the world, divines, both ancient and modern, have entertained very different opinions. With regard to the person of Jesus Christ (see *PERSON*), some have supposed that he is the same in substance, and equal in power and glory, with the Father. The second article of the church of England expresses this doctrine in the following words: "The Son, which is the Word of the Father, begotten from everlasting of the Father, the very and eternal God, of one substance with the Father, took of man's nature in the womb of the blessed Virgin, of her substance; so that two whole and perfect natures, that is, the godhead and manhood, were joined together in one person, never to be divided: whereof is one Christ, very God and very man, who truly suffered, was dead and buried." Others, who cannot adopt this generally received opinion concerning Christ, as God, of the same substance, and equal with the Father, reject the common meaning of the word *person*, and admit only what

they call a modal distinction. But in order to avoid the charge of Sabellianism, which they conceive to be a very pernicious opinion, and which holds one person only in the Deity, under three different denominations, they say, that though the Father, the Son, and the Holy Ghost are not three distinct beings, or individuals, there is a distinction, which may be represented by that of three persons. (See SABELLIANS.) Others again, dreading the tritheism charged upon the common opinion, suppose the Son to be inferior to the Father in every respect but this, that they are co-eternal, and have all the divine attributes that are communicable, not of themselves, but of the Father. Episcopius and Cudworth adopted this opinion, and were followed by Dr. Clarke, Jackson, &c. Dr. Clarke, in particular, maintained, that there is one Supreme Being, who is the Father, and two subordinate, derived and dependent beings; but he waves calling Christ a *creature*, as the ancient Arians did, and principally on that foundation disclaims the charge of Arianism. (See SEMI-ARIANS.) Bishops Pearson and Bull, and also Dr. Owen, were of opinion, that though God the Father is the *fountain* of the Deity, the whole divine nature is communicated from the Father to the Son; yet so as that the Father and Son are not separate, nor separable from the divinity, but do still exist in it, and are most intimately united to it. Dr. Watts, who has been followed by others, in what some have denominated the “indwelling scheme,” and which, as it is sometimes interpreted, has merely shades of difference from Sabellianism, maintained, that one supreme God dwells in the human nature of Christ, which he supposes to have existed the first of all creatures; and he speaks of the divine *Logos* (which see) as the *wisdom* of God, and the *Holy Spirit* (see SPIRIT) as the divine *power*, or the influence and effect of it; which, he says, is a scriptural person, *i. e.* spoken of figuratively in scripture under personal characters. Others, classed, however they differ from one another, under the general denomination of Arians, suppose the Son to be a spiritual being or intelligent agent, subordinate and inferior to the Father; not the same with the Father, or equal to him, or of the same nature and essence; but said to be God, on account of his great excellence and power, derived to him by the will of the Father. But of those who adopt this general opinion there are various gradations, as we have already shewn under the article ARIANS. Others, who are supposed to adopt sentiments similar to those of the ancient Nazarenes and Ebionites, and who in later times have been denominated Socinians and Unitarians, though they have no exclusive title to the latter appellation, maintain, that Jesus is a man, possessing a reasonable soul united to a human body, and favoured by God with extraordinary communications of knowledge and power. Some of this class believe that Jesus was a man, not made as Adam, but born of a woman, not in the ordinary way of generation, but of a virgin, by the immediate operation and miraculous power of God (Luke, i. 35.); but others, rejecting the sentiment of a miraculous conception, are of opinion that Jesus Christ was literally and truly the son of Joseph and Mary, born like other men in the ordinary course of nature, and subject to similar infirmities. This man, they say, was endowed with extraordinary gifts and powers for fulfilling the important commission with which he was entrusted; and when the purposes of his selection and appointment were completed, he died, and was raised from the dead, in testimony to the truth of the important doctrine taught by him, and as a pattern of that resurrection of which he assured his faithful followers. Whether this opinion, or that of those who maintain the pre-existent dignity of the spirit of Jesus Christ, and

its union with a corporeal frame by an extraordinary interposition of divine power, be most agreeable to the high notions we are led to entertain of the impeccable and exemplary character and super-eminent office sustained by Christ, as the teacher, saviour, and judge of mankind, and also to the language of the Old and New Testament by which he is described, we leave to the unprejudiced consideration and impartial decision of the reader. Persons of both these descriptions equally maintain the unity of God, and of the object of worship; and are therefore unquestionably entitled to the appellation of Unitarians. Moreover, it is his duty to deliberate, and to inquire without prejudice, equally disregarding the charge of credulity and innovation, whether he ought not to retain, or even now to adopt, the commonly received notion concerning the person of Jesus Christ, sanctioned as it is by the authority of many learned divines, who, after diligent examination, conceive it to be most conformable to the language of scripture, and to the doctrine of divine revelation. See TRINITY and UNITARIANS.

Under the article EPOCHA of *Christ*, we have stated the opinions that have been generally adopted with regard to the era of our Saviour's nativity and the time of his death. But as different sentiments have been maintained respecting the duration of his ministry, we shall here inquire into the reasons on which they are founded. To this purpose, St. Luke says (ch. iii. 1, 2.) “Now in the 15th year of the reign of Tiberius Cæsar, Pontius Pilate being governor of Judea,—the word of God came unto John, the son of Zacharias:” and the evangelist adds (ch. i. 21—23.) “Jesus also being baptized.—And Jesus himself began to be about 30 years of age.” It is added in St. John's gospel, as another note of time to our present purpose, (ch. ii. 20.) “Forty and six years was this temple in building.” From several circumstances stated by Dr. Lardner, it appears that Jesus was born about a year and six or seven months before the death of Herod, that is, before the latter end of the year of Rome 748 or 749, that is, in September or October. We have shewn under the article EPOCHA with what propriety our Lord might be said to be “about 30 years of age” in the fifteenth year of Tiberius, supposing it to be the fifteenth of his proconsular empire. Accordingly, if the fifteenth of Tiberius's proconsular empire began the 28th of August, A.U. 778. A.D. 25, and if John the Baptist began to preach in November that year, but did not baptize Jesus till after he had preached a year and some months, then the passover at which these words were spoken was the passover A.U. 780. A.D. 27. Or, if the fifteenth year of Tiberius's reign began A.U. 779. A.D. 26, and John began then to preach, and Jesus was baptized by him some time before the passover next following, still these words would be spoken by the Jews at the passover A. U. 780. A.D. 27. The eighteenth year of Herod's reign, from the death of Antigonus, is supposed to have begun some time in A.U. 734. Herod might make his offer to the Jews of rebuilding the temple at the feast of tabernacles in November that year: from November A.U. 734; to the passover A.U. 780. A.D. 27, is almost 45½ years; at this time, therefore, the Jews might not improperly say, the temple had been 46 years in building. The 46th year was then current, and it was to the purpose of the Jews rather to add to than to diminish the time which had been spent in that work; so that there is no time more suitable to these words of the Jews than the passover A.D. 27; though there is no manner of inconsistency between understanding the fifteenth of Tiberius, of his proconsular empire, and supposing that these words were spoken at the passover

passover A.D. 28, and then the temple might have been 46 years in building. The words of St. Luke, "and Jesus himself began to be about 30 years of age," may be understood with some latitude. Jesus might be 32 years of age or more at this time; the word *about*, *ωσθι*, being often used when a precise exactness is not intended or expected. Matt. xiv. 21. Mark, vi. 44. Luke, ix. 14. John, vi. 10. Acts, ii. 41. Luke, i. 56. xxii. 41. John, i. 39. Acts, v. 36. Understanding St. Luke's words in this manner, it would be easy to shew the agreement of his numbers with the time of our Saviour's nativity. The fifteenth of Tiberius's sole empire began A.U. 781. A.D. 28. If Jesus was baptized the sixth of January A.U. 782. A.D. 29, he would be but some months above 33 years of age, though he was born so soon as September A.U. 748. And if he was born A.U. 749, then, though his baptism be placed in the beginning of A.U. 783. A.D. 30, still he would be little more than 33 years of age. All the other notes of time are also very easily reconciled with this fifteenth year of Tiberius's sole empire. Pontius Pilate came into Judea before the passover, in the twelfth year of Tiberius's sole empire, A.U. 779. A.D. 26, and continued there ten years, therefore he was undoubtedly governor of Judea at the commencement of John the Baptist's ministry, and till after our Saviour's crucifixion. As for the words of the Jews, spoken by them at the first passover of our Saviour's ministry, "Forty-six years has this temple been in building;" it is but to suppose that they referred not to the time when Herod made the proposal of repairing the temple, in the eighteenth year of his reign, but to the time when, in pursuance of that proposal, he actually set about the work, after he had got all things in readiness for it, and it will be easily perceived that these words are agreeable to truth. Dr. Lardner suggests, that the supposition of St. Luke's intending the first of the epochs above-mentioned, that is, the fifteenth of Tiberius's proconsular empire, seems to be very much favoured by the first Christians; who generally place the crucifixion of Jesus at the passover of the fifteenth of Tiberius's sole empire, when the two Gemini were consuls of Rome, A.D. 29. With regard to the duration of our Lord's ministry, it appears from the above statement to be between two and three years. Thus also, according to the Harmony of Tatian, A.D. 220, it consists of two years and a part, for the third year, in which our Lord dies, is not complete. Tatian therefore computes three passovers in the gospels, at the last of which Jesus suffered. And it is evident that he reckoned no more, because he does not suppose the "feast" of the Jews, mentioned John, v. 1. to have been a passover, but pentecost, as he plainly calls it. This, says Dr. Lardner, is a mark of antiquity; modern harmonists, who prolong our Lord's ministry beyond the space of three years, generally reckon this feast, though without any good reason, a passover. So Irenæus computed three passovers in our Lord's ministry; and Origen too says, that Judas was not three years with Jesus. Indeed it appears, that this father thought our Saviour's whole ministry was above two, but not quite three years, while the most public part of it did not consist of more than a year and some months: and this, says Dr. Lardner, "I have long taken to be the truth, so far as I am capable of learning it from a careful reading of the gospels." In St. John's gospel are three passovers, and our Saviour's ministry has two years and a part; but the former part of his ministry there related, was not so public as that after John's imprisonment. In the other three evangelists, who relate chiefly our Lord's most public preaching after John

the Baptist's imprisonment, is the history of only somewhat more than the space of one year; how much more it is not very easy to say; all which is much confirmed by comparing them with St. John. Eusebius discovered four successive passovers in the gospel of St. John, and therefore was of opinion that our Saviour preached three years and a half; and his opinion has been generally prevalent. Some critics, indeed, have extended the public ministry of Christ a year or two farther, and sir Isaac Newton makes it to comprehend five passovers: whereas the oldest Christian fathers were almost universally of opinion, that our Lord preached no longer than one year, or one year and a few months. Mr. Mann some years ago proposed the hypothesis of *one year*, to which he seems to have been led by his peculiar interpretation of Daniel's 70 weeks, with which he makes it to correspond. The birth of Christ he assigns to the seventh year before the commencement of the common Christian era, A.U. 747. Jul. Per. 4707, and he places his death in the year 26, or the fifteenth of Tiberius, reckoned from the time of his becoming associate in the empire with Augustus. Mr. Mann lays great stress upon the testimony of the ancient fathers, cited by sir Isaac Newton in his "Observations upon Daniel," viz. Clemens Alexandrinus, Origen, Tertullian, Julius Africanus, Lactantius, Jerome, Austin, Sulpicius Severus, and Prosper, to whom he adds Justin Martyr, and Valentinus the heretic. Besides, he observes that Luke mentions only two epochs in his history of Christ, that of his birth and that of his baptism; and therefore he was, with reason, understood by the fathers to comprehend in the second epoch his death with his baptism, both happening within the compass of the same year, or but a few months more. To this, says he, may be added the probability that the evangelist mentions both Annas and Caiaphas as high priests, because Annas was in that office in that year which included most of the preaching and miracles of Christ, and Caiaphas in the other, in the first quarter of which our Lord suffered. Moreover, the passage in Isaiah, lxi. 1, 2, which our Lord read in the synagogue at Nazareth, and which he notified to be then fulfilled, viz. "The spirit of the Lord is upon me, for he has anointed me to preach the acceptable year of the Lord," was anciently, says Mr. Mann, thought to signify that Christ was to preach but one year, distinguished by that appellation. Besides, Matthew, Mark, and Luke evidently supposed the preaching of only one year; and even John's gospel, which alone has been thought to suppose more, will not, in fact, be found to do so. For he mentions only one summer and one winter. He describes the events of only two passovers, one pentecost, one feast of tabernacles, and one feast of dedication; and he mentions them in their natural order, if we suppose that the sixth chapter of this evangelist hath been transposed out of its proper place, and that it should precede the fifth. Against Mr. Mann's hypothesis, it has been objected that in John, vi. 4, we read, "And the passover, a feast of the Jews, was nigh." But he answers, that John could not have written thus; because he had mentioned the passover in ch. ii. and related several of the events of it: he could not, therefore, suppose that his readers would want an explanation of the term in that place. Gerard Vossius, and other critics, would therefore read, "And a feast of the Jews was nigh," and they imagine, that the word "passover" was first added as a conjectural explanation of some person or other. However, it is again alleged, that the ancient fathers could never have imagined, as they did, that Christ preached only one year, if this third passover had been so expressly mentioned in their copies of this gospel. Besides,

there is no mention of Christ's assisting at any third passover. Mr. Mann's hypothesis has been adopted by Dr. Priestley, who has endeavoured, by an examination of Mr. Mann's reasoning, and by new arguments, to confirm it. He alleges, that some very short periods of our Lord's public ministry appear, according to the accounts of all the evangelists, to have been very full of business; and if, he says, our Lord had passed three or four years in this manner, and the twelve apostles had also been teaching and working miracles in six different places, for the space of a year or more, in that small country, and the 70 also in 35 places more, for the same space of time as is generally supposed; such a number of miracles would have been performed, as this author cannot but think must have exceeded every proper purpose of them. Either there could have been no unbelievers left in Judea; or, if the tendency of the miracles had been to exasperate, such a resentment would have been excited in the minds of the Jewish rulers, as, without a greater miracle than any of the rest, could not but have terminated in his death long before. Besides, it is more easy to account for the prejudices of the apostles, and their ignorance of the true nature of Christ's kingdom, even at and after our Lord's death, and the supposition that his ministry was of a short, than that it was of a long duration. Farther, if our Lord really preached three or four years, and, consequently, if the evangelists have sometimes passed over all the events of whole years at a time, is it not surprising that none of them should ever connect those very distant parts of their narrative by such phrases as *the year following, after one, or after two years, &c. &c.*; their usual transition, *after these things, or afterwards,* cannot be construed to mean *after a year or two.* Again, if Jesus had been preaching and working miracles, both in Judea and in Galilee, almost a year before the death of John the Baptist, agreeably to the common hypothesis, Herod, who reigned in Galilee, could not but have heard of him, and therefore could not but have known that he was not John that was risen from the dead, as in Matt. xiv. 1. Whereas, if we suppose that Jesus had preached only a few weeks before the death of John, we may imagine, that, engaged as Herod was in a multiplicity of business and pleasure, he might not have heard of him till that time; and therefore might, with some plausibility, conjecture, as he did, that he was John risen from the dead. This argument is considered by Dr. Priestley as almost conclusive against the common hypothesis. Moreover, all our Lord's journeys, of which the evangelists give any account, agree in so many circumstances, that they are evidently the same, and are supposed to be so by all harmonists. All his journeys to Jerusalem amount to no more than four; three of which, at least, every pious Jew was obliged to make in the compass of every year. John, who supplies many of the deficiencies of the other evangelists, only makes up the number of them to four. Dr. Priestley considers the objections to this hypothesis, urged by archbishop Newcome and others, and endeavours to obviate them. He then arranges the leading events in the life of Christ, and points out the particular periods in which they occurred, together with the circumstances attending them; and closes with a computation of the time that was necessary for the purpose of Christ's ministry. He annexes a calendar, exhibiting the months and days that elapsed between the first of the Jewish month Nisan, answering to the 17th of March in the Julian computation, to the 30th of Nisan, corresponding to the 2d of April in the following year, together with the principal events that happened during each particular period. According to this calendar, Jesus, be-

fore the passover in the 14th of Nisan, had attended the preaching of John, had been baptised by him, had passed 40 days in the wilderness, and had preached in Judea, probably both before and after his return to Cana in Galilee, where he turned the water into wine. The ensuing pentecost happened on the 6th of the Jewish month Sivan, or the 20th of May; the transfiguration, the 6th of Abb, or the 18th of July; the feast of tabernacles, the 15th of Tifri, or the 24th of September; the feast of dedication, on the 25th of Celsu, or 2d of December; the resurrection of Lazarus, in the beginning of Adar, or February; the triumphant entry into Jerusalem, on the 10th of Nisan, or 13th of March; the passover, at which the Lord's supper was instituted, on the 14th of Nisan, or 17th of March; the crucifixion of Christ, on Friday the 15th of Nisan, or 18th of March, A. D. 29; his resurrection, on the 17th of Nisan, or 20th of March; and his appearance to the apostles, when Thomas was present, on the 24th of Nisan, or 27th of March. Calmet's Dict. Lardner's Works. Priestley's Harmony. Newcome's Harmony.

JESUS *de Cuyaba, El*, in *Geography*, a town of Brazil, in the government of Matto Grosso.

JESUS *Iland*, a small island in the Pacific ocean, discovered by Mendana in 1567, and inhabited by a copper-coloured and mulatto race of men; eight degrees due N. of the New Hebrides. S. lat. 6° 50'. E. long. from Paris 165°.—Also, an island in the river St. Lawrence, near that of Montreal, about 24 miles long and six wide.

JESUS *de Machaca*, a town of Peru, in the diocese of La Paz; 40 miles W. of La Paz.

JESUS *Maria*, a town of South America, in the province of Cordova; 30 miles N. of Cordova.

JESUS *Maria de los Montes*, a town of South America, in the government of Buenos Ayres; 60 miles S. of Santa Cruz de la Sierra la Nueva.

JESUS, in *Ichthyology*, a name given by the people of Dantzic to the fish called by Gesner the blue chub, or capito cæruleus. It is called also *jese, jesen, and jesitz.*

JESUS, *Fathers of the Oratory of.* See ORATORY.

JESUS, *Order of.* See Order of SERAPHIM.

JESUS *Christ, Order of*, was instituted at Avignon, in Italy, by pope John XXII. in the year 1320. The reigning pope was appointed sovereign and master of the order. The badge of the order, which is worn by the knights pendent to a scarlet ribbon tied to a button-hole of the waistcoat, is a cross of gold, enamelled gules, and edged with gold.

JESUS *and Mary, Order of*, was instituted in Italy, in the year 1615, by pope Paul V. The knights of this order were sworn to defend the holy see of Rome against all infidels and heretics; and for that purpose each knight was constantly to keep ready a horse completely accoutred, a sword, and a lance, and each of his domestics armed with a fusil. The badge of this order was a cross of eight points, like that of Malta, red, edged with gold, bearing in the centre the letters I. H. S. and over them the letter Ω , the symbol of the Holy Virgin.

JET', GAGATES, in *Natural History*, the name of a fossil substance, the characters of which are these: it is a solid, dry, opaque, inflammable body, found in large detached masses of a fine and regular structure, having a grain like that of wood, splitting more easily horizontally than in any other direction, very light, and moderately hard, not fusible, unless in a moderately strong heat, but readily inflammable, and burning a long time with a fine greenish white flame, and bituminous smell. Its specific gravity is 1.3. See *Pitch-coal* under the article COAL.

Jet has been often confounded with the common cannel coal, though a proper consideration of their distinguishing characters is sufficient to establish the difference between them.

Jet is always found in detached masses lodged in other strata; cannel coal constitutes of itself whole strata. Jet has the grain of wood, and splits horizontally much more easily than in any other direction; cannel coal has no peculiar grain, and splits with equal ease any way. Jet is but moderately hard, cannel coal not less so than many stones; and jet, when set on fire, flames a long time; cannel coal but a little while. Jet is found in Italy, Germany, and the East Indies, but no where so plentifully as in England; it is very common in Yorkshire, and other of the northern counties, and is found in many of our clay pits about London.

Mr. Farey remarks, that jet is perhaps only in England found imbedded in the alum shale strata of Yorkshire; of which numerous specimens are met with in the shale cliffs near Whitby, and at Huntcliff and Cleveland, as Dr. Grew mentions; although the alluvial clays, and the sands on the shores of most places on the eastern coast of England, produce specimens of jet. Near Leige, and near Zuicca, in Mesena, it is found in considerable quantities; and on the coasts of Basilan or Bassilian, one of the Philippine isles. Mr. Mawe, in his Mineralogy of Derbyshire, p. 92 and 93, mentions indurated bitumen found in that county which resembles jet.

By distillation jet yields first an acid liquor, then a thin, and afterwards a thick black oil. By friction it becomes electrical, as amber does. See AMBER.

JET, in *Medicine*, was highly praised by the ancients, but the modern practice has never enquired whether jully or not. Dioscorides tells us, that it is an excellent emollient and discutient; he recommends a fumigation of it for diseases of the womb, and says, that water, in which burnt jet has been quenched, is a cordial. Aëtius orders it to be extinguished in wine for the same purpose. It has been much used by the perfumers.

There is also a fictitious jet, made of glass, in imitation of the mineral jet: this is now usually drawn out into long hollow threads, which are cut and fashioned at pleasure. It is much used in embroideries, and in the trimmings of mourning, and may be made of any colour, though it is usually black and white; and of late is denominated *bugles*.

JET *d'Eau*, a French word, signifying a fountain that casts up water to any considerable height in the air.

The velocity of a small jet of water issuing in any direction from a reservoir, is nearly equal, in favourable circumstances, to the velocity acquired by a body in falling through the height of the surface of the reservoir above the orifice. Supposing a very small plate of water, immediately within the orifice, to be put in motion at each instant by means of the whole pressure of the fluid, which is equal to the weight of a column on the same base, of the height of the reservoir; and supposing the whole pressure to be employed in generating the velocity of the thin stratum, neglecting the motion of the surrounding fluid, this stratum would be urged by a force as much greater than its own weight as the column is higher than its thickness, through a space which is shorter than the height of the column in the same ratio. But the spaces being inversely as the forces, the final velocities are equal; and the velocity then generated would be equal to that of a body falling through the height of the column. And although a part of the pressure of the column is expended in producing motion in its own particles,

this part is not wholly lost, because the velocity of these particles renders them more easily actuated by the pressure of the succeeding column. Still, however, some deduction must be made for the lateral motions of the neighbouring particles, which tend rather to diminish the quantity of the discharge, than to lessen the actual velocity of the jet: the particles approaching, and even passing through the orifice obliquely, contract the diameter of the stream nearly in the ratio of 4 to 5, when the aperture is in a thin plate: but the velocity in the contracted part is only one-fortieth or one-fiftieth less than that which is due to the height.

Here we may observe, that the velocity of the discharge through different kinds of apertures may be found by multiplying the square root of the height in feet by a certain co-efficient: this, for the undiminished velocity, is 8.0229; for an orifice imitating the form of the contracted stream, 7.8; for bridges with pointed piers, 7.7; for bridges with square piers, 6.9; for short pipes, from two to four times as long as their diameter, 6.6; for orifices in a thin plate, and for weirs, about 5. When the orifice is made between two reservoirs, the discharge is nearly in the same relation to the difference of their heights.

A jet of water issuing from an orifice of a proper form, and directed upwards, rises nearly to the height of the head of water in the reservoir. For it has been shewn, that the velocity is nearly equal to that which is produced by the fall of a body through the height, and each of the particles may be considered nearly as a separate projectile.

If a jet issue horizontally from any part of the side of a vessel, standing on an horizontal plane, and a circle be described having the whole height of the fluid for its diameter, the fluid will reach the plane at a distance from the vessel, equal to that chord of the circle in which the jet initially moves. The horizontal velocity of the jet, being equal to that which is acquired by a body falling through the distance AB (*Plate XIV. Hydraulics, fig. 1.*), below the surface, would describe, in the time of falling through AB , a distance equal to $2 AB$ (see *ACCELERATED Velocity*), and in the time of falling through BC , in which the jet will reach the horizontal plane, a distance greater in the ratio of those times, or of the square roots of the spaces. Call AC , 1 ; then $1 : AD :: AD : AB$, $AD^2 = AB$, and $AD = \sqrt{AB}$; in the same manner $CD = \sqrt{BC}$, therefore the times are as AD and CD : but $AD : CD :: AB : BD$, and $2 BD$, or DE ; will be equal to the space CF described by the horizontal velocity in the time of falling through BC . See *Hydraulic Laws of FLUIDS*.

Notwithstanding what we have above stated with regard to the ascent of a jet, it is well known that a jet *d'eau* will never raise water so high as its reservoir; and, therefore, gives less water than if it went to the full height. Of this phenomenon there are several causes: the first is; that the velocity of the lower particles of the jet is greater than the velocity of the upper; and, therefore, the lower water strikes that which is next above it; and as fluids move every way, by its impulse widens and consequently shortens the column. Another cause is, that the water at the top of the jet does not immediately fall off, but forms a kind of ball or head, the weight of which depresses the jet; if the jet be a little inclined, it will play higher, but be less beautiful; besides, the friction against the sides of the hole of the ajutage, or spouting-pipe, will make a small jet rise to a less height than a larger one from the same reservoir. To remedy this inconvenience, the spouting holes should be increased in proportion to the height of the spouting water, provided that they are not made too wide for the pipe of conduct.

conduct. The fourth cause is the air's resistance, which is proportional to the square of the velocity, with which the water of the jets of different heights strike it: and, therefore, the deficiency in height being in the same proportion, a jet that plays with a double velocity will have that deficiency four times as great, &c. Thus, if a jet of five feet high lose one inch in height, by coming from a reservoir of

five feet one inch high, a jet produced from a reservoir of ten feet four inches, will rise but ten feet; and in this manner a table might be easily formed shewing by what height of reservoirs jets of a determinate height may be produced. The following table shews in feet, and decimals of a foot, what jets will be produced by reservoirs of a determinate height.

| Reserv. | Jet. | Reserv. | Jet. | Reserv. | Jet. | Reserv. | Jet. | Reserv. | Jet. | Reserv. | Jet. |
|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|--------|
| 5 | 4.91 | 21 | 20.58 | 39 | 34.93 | 56 | 48.24 | 73 | 60.71 | 90 | 72.48 |
| 6 | 5.88 | 23 | 21.46 | 40 | 35.74 | 57 | 48.99 | 74 | 61.42 | 91 | 73.15 |
| 7 | 6.84 | 24 | 22.33 | 41 | 36.55 | 58 | 49.74 | 75 | 62.13 | 92 | 73.82 |
| 8 | 7.80 | 25 | 23.20 | 42 | 37.35 | 59 | 50.49 | 76 | 62.84 | 93 | 74.49 |
| 9 | 8.74 | 26 | 24.06 | 43 | 38.14 | 60 | 51.24 | 77 | 63.54 | 94 | 75.16 |
| 10 | 9.68 | 27 | 24.92 | 44 | 38.93 | 61 | 51.99 | 78 | 64.24 | 95 | 75.83 |
| 11 | 10.62 | 28 | 25.78 | 45 | 39.75 | 62 | 52.73 | 79 | 64.94 | 96 | 76.49 |
| 12 | 11.55 | 29 | 26.63 | 46 | 40.53 | 63 | 53.47 | 80 | 65.64 | 97 | 77.15 |
| 13 | 12.48 | 30 | 27.48 | 47 | 41.31 | 64 | 54.20 | 81 | 66.33 | 98 | 77.81 |
| 14 | 13.40 | 31 | 28.32 | 48 | 42.09 | 65 | 54.93 | 82 | 67.02 | 99 | 78.47 |
| 15 | 14.31 | 32 | 29.16 | 49 | 42.87 | 66 | 55.68 | 83 | 67.71 | 100 | 79.12 |
| 16 | 15.22 | 33 | 30. | 50 | 43.65 | 67 | 56.39 | 84 | 68.40 | 110 | 85.58 |
| 17 | 16.13 | 34 | 30.83 | 51 | 44.42 | 68 | 57.12 | 85 | 69.08 | 120 | 91.86 |
| 18 | 17.03 | 35 | 31.63 | 52 | 45.19 | 69 | 57.84 | 86 | 69.76 | 130 | 97.99 |
| 19 | 17.93 | 36 | 32.47 | 53 | 45.96 | 70 | 58.56 | 87 | 70.47 | 140 | 103.97 |
| 20 | 18.82 | 37 | 33.29 | 54 | 46.72 | 71 | 59.28 | 88 | 71.14 | 150 | 107.87 |
| 21 | 19.70 | 38 | 34.11 | 55 | 47.48 | 72 | 60. | 89 | 71.81 | | |

By various experiments that have been made by Mr. Mariotte, Dr. Defaguliers, and others, it has been found, that if the reservoir be five feet high, a conduct-pipe $1\frac{3}{4}$ inch diameter will admit a hole in the ajutage from $\frac{1}{4}$ of an inch to $\frac{1}{2}$ of an inch; and so on as in the following table:

| Height of Reservoir. | Diameter of the Ajutage. | Diameter of the Pipes of Conduct. |
|----------------------|---|-----------------------------------|
| 5 Feet | $\frac{1}{4}$ to $\frac{1}{2}$ | $1\frac{3}{4}$ inch. |
| 10 | $\frac{1}{4}$ th to $\frac{1}{2}$ an inch | 2 inches. |
| 15 | $\frac{1}{2}$ an inch | $2\frac{1}{2}$ inches. |
| 20 | an inch | $2\frac{1}{2}$ inches. |
| 25 | an inch | $2\frac{3}{4}$ inches. |
| 30 | to $\frac{3}{4}$ of an inch | 3 inches, or $3\frac{1}{2}$. |
| 40 | $\frac{3}{4}$ of an inch | $4\frac{1}{2}$ inches. |
| 50 | $\frac{3}{4}$ of an inch | 5 inches. |
| 60 | 1 inch | $5\frac{3}{4}$ inches or 6. |
| 80 | $1\frac{1}{4}$ inch | $6\frac{1}{2}$ inches or 7. |
| 100 | $1\frac{1}{4}$ or $1\frac{1}{2}$ inch | 7 or 8 inches. |

Here the jet is supposed to be within 100 or 150 yards of the reservoir; but if the conduct-pipe much exceeds this length, it must be of a larger diameter than what is here assigned. Thus for jets from $\frac{3}{4}$ of an inch to those of an inch and $\frac{1}{4}$, and from reservoirs from 40 to 90 feet height, if the distance be from 150 yards to $\frac{1}{4}$ of a mile, the diameter of the pipe should be of six inches; from $\frac{1}{4}$ of a mile to two miles, it must be of seven inches; and from two miles to five, it must be of eight inches diameter for the same jet.

If it be required to keep any number of jets playing whose ajutages are given in diameter, by one common conduct-pipe, we must find the diameter of an ajutage equal to all the given ones. Thus if there be four ajutages of $\frac{3}{4}$ of an inch diameter each, then the square of $\frac{3}{4}$ is $\frac{9}{16}$, which

multiplied by the number of ajutages 4, makes $\frac{36}{16}$: the square root of which is $\frac{6}{4} = 1\frac{1}{2}$ = the diameter of the ajutage equal to all the four small ones. A pipe of conduct of 10 inches diameter will supply all the jets, as being a little more than six times as great as the diameter of the one large ajutage now found. After this manner the dimensions of a conduct-pipe may be found in any other number of ajutages.

In order to make a jet play to the greatest possible height, the part of the conduct-pipe at the ajutage should not turn up at right angles, but with a gentle easy curve: for the best structure of the ajutage, see AJUTAGE. See also FOUNTAIN. Defaguliers' Course of Exp. Phil. vol. ii. lect. vii. annot.

JET RINGS, annular pieces of jet of large dimensions, found in many parts of England, and esteemed Roman antiquities. They are of different kinds; some being plain, others wrought, but all of them are much too large for rings. The smallest of them are three inches in diameter; yet the bore is not above an inch and a half, which makes them as much too small for the wrist as they are too large for the fingers.

JETAIBA, in Botany, a name given by some authors to the trees which afford the gum anime of the shops.

JETANS, or CAMANCHES, as the Spaniards call them, or Padoucas as they are denominated by the Pawnees, in Geography, a powerful nation, entirely erratic, without the least species of cultivation, subsisting solely by the chase. Their wanderings are confined to the frontiers of New Mexico on the W., the nations on the Lower Red river on the S., the Pawnees and Osage on the E., and the Utahs, Kyaways, and various unknown nations on the N. Their nation, although entirely in the territories of the United States, is claimed exclusively by the Spaniards, and may be said to be decidedly in their interest. They are the only nation who border on the Spanish settlements, which that government

government treats as an independent people. They are by the Spaniards reputed brave.

JETHLAH, or **JETHALA**, in *Ancient Geography*, a town of Palestine, in the tribe of Dan. Josh. xix. 1, 2.

JETPOUR, in *Geography*, a town of Hindoostan, in Guzerat; 10 miles N. of Junagur.

JETSON. See **FLOTSON**.

JETTY, in *Engineering*, is the name for a small pier or projection into a river, for narrowing it and raising the water above that place. See *Transactions of the Society of Arts*, vol. xxiv.

JETTY-head, in the *Royal Dock-yards*, is a name usually given to that part of a wharf which projects beyond the rest; but more particularly the front of a wharf, whose side forms one of the cheeks of a wet or dry dock.

JETZ, in *Geography*, a town of Japan, in the island of Niphon; 84 miles N.N.E. of Meaco.

JEU, *Fr.* in *Music*, the action of playing upon an instrument. See **JOUER**.

Plein-jeu and *demi-jeu* are often used by the French for *forte* and *piano*.

JEVER, in *Geography*, a town of Germany, and capital of a country called "Jeverland," situated in the N.E. part of East Friesland, on the W. side of the mouth of the Wefer, which belongs to the prince of Anhalt-Zerbit; 28 miles N.E. of Emden. N. lat. 53° 30'. E. long. 7° 53'.

JEUNE, **CLAUDELE**, in *Biography*. See **CLAUDIN**.

JEUREV-POLSKAI, in *Geography*, a town of Russia, in the government of Vladimir; 32 miles N.N.W. of Vladimir.

JEUX, *Fr.* See **GAMES**.

JEUX d'Orgues, *Fr.* stops of an organ.

| | | |
|-----------------------|--------------------------------------|-------------------------------|
| Prestant | unison with the | Open diapason, |
| Bourdon | double base | Bordun, |
| Bombarde | base to the hautbois | Bassoon, |
| Nazard | octave of the 5th | Twelfth, |
| Tierce } Lariget } | double octave of the } sharp 3d } | Tierce, |
| | | { Octave of the } twelfth, |
| Voix angelique | octave of the | Vox humana. |

Many of the names of stops in French organs are the same as in English organs built by Renatus Harris soon after the restoration: such as the flute, tierce, lariget, cornet, furniture, trumpet, vox humana, or voix humaine, cromorne, clarion, &c. We shall give English equivalents to the rest in the article **ORGAN**, where will be found a list of the stops in the famous organ at Haerlem.

JEW-BILL, in *Law*, is the famous statute 26 Geo. II. cap. 26. which enabled all Jews to prefer bills of naturalization in parliament, without receiving the sacrament, as ordained by stat. 7 Jac. I. This act was repealed by 27 Geo. II. c. 1.

JEWEL, any precious stone, or ornament beset with them. (See **DIAMOND**, **RUBY**, &c.) The use of jewels prevailed to a great degree, and at an enormous expence, among the Jews, Greeks, and Romans; and has continued in various nations to this day.

JEWEL JOHN, in *Biography*, a learned prelate of the church of England, and zealous champion for the Protestant cause, descended from a very respectable family, was born at Buden, in Devonshire, in the year 1522. He received at different schools, in his own county, the elements of a learned education, and before he was fourteen years of age we find him at Merton college, Oxford, where he made great progress in the learning of the place, and was

at the same time initiated in the principles of the reformed religion. In the year 1539, he removed to Corpus Christi college, of which he had been elected a scholar, and in the following year he took his first degree. Soon after this he commenced tutor with high reputation, and contributed much to promote the reformation, by privately instructing his pupils in Protestant principles. Mr. Jewel, at this period, though looked up to by his contemporaries on account of his great learning, was not more celebrated for his literary acquirements, than he was for eminent piety, and the exemplariness of his manners. In 1544, he was admitted to the degree of M.A., and upon the accession of Edward VI. in 1546, he openly avowed himself a Protestant, and embraced every opportunity which offered itself to promote the progress of the reformation, both in his college lectures, and in private conversation. He obtained some church preferment, and his talents as a preacher procured for him great acceptance, and general applause. The zeal which he displayed during the whole of king Edward's reign, to disseminate Protestant principles, occasioned his being one of the first victims to the resentment of the Papists upon the accession of queen Mary: he was immediately expelled from his college, but so high did he stand for real talent, that he was at the same time appointed the orator of the place, and actually employed to draw up a congratulatory address upon the accession of the new queen. It has indeed been thought, that this appointment was intended for the purpose of ensnaring him, either by rendering him odious to his own party, if he accepted it, or by provoking the enmity of the Catholics, if he refused it. Mr. Jewel, however, disappointed his enemies, for the address which he drew up on the occasion was worded by him in such respectful and guarded terms, that it gave no offence to either party, and was favourably received by the queen. Mr. Jewel now withdrew from the impending storm, but his enemies followed him, and being urged with the threat of a cruel death, his fortitude forsook him, and he signed his belief of doctrines which his understanding rejected, and his heart abhorred. This public declaration was of but little service to him, his enemies thirsted for his blood, and the furious Bonner was resolved, if possible, to attain the object of his wishes, but after encountering a thousand hair-breadth escapes, he was safely landed on the Continent, and thus freed from the perils which threatened him. He immediately proceeded to Frankfurt, and made a public confession before the English exiles in that city of his sincere contrition on account of his late subscription, begging pardon of God, and of the church, for the weakness which he had discovered in that transaction. After a short stay at Frankfurt, he went to reside with his old friend Peter Martyr at Strasburg, whom he accompanied to Zurich, where he assisted him in the publication of some of his writings, and in the composition of his theological lectures. On the death of queen Mary, Mr. Jewel returned to his native country, and was graciously received by queen Elizabeth, who appointed him one of the sixteen divines selected to hold a public disputation in Westminster abbey, upon the principal points of controversy between the Protestants and Papists. He was also commissioned with others to visit certain dioceses in the western parts of England, with the view of eradicating Popery from them, and, in the year 1560, he was promoted by his sovereign to the bishopric of Salisbury. He was incessant in the work attached to his office, and was literally worn out in the duties which he conceived to belong to the pastoral office. He died in September 1571, at Monkton-Farley, in Wiltshire, when he was in the fiftieth year of his age: he was author of a vast number of works, many of which are

still held in high estimation. They were collected and printed uniformly in 1609, and some of his letters are preserved in Bishop Burnet's History of the Reformation. He was one of the most eminent scholars among the reformers: was a great proficient in the learned and in some of the modern languages: he had a strong memory, which he so improved by art, that he was able to repeat most exactly what he had written after once reading it. *Biog. Brit.*

JEWEL-Blocks, in a *Ship*, are two small blocks, which are suspended at the extremity of the main and fore-top-fail-yards, by means of an eye-bolt, driven from without into the middle of the yard-arm, parallel to its axis. The use of these blocks is to retain the upper part of the top-mast-studding-sails beyond the sheets of the top-sails, so that each of these sails may have its full force of action, which would be diminished by the incroachment of the other over its surface.

JEWISH BELIEVERS, in *Ecclesiastical History*. See EBIONITES and NAZARENES.

JEWISH Canon. See CANON.

JEWISH Economy. See ECONOMY.

JEWISH Hours. See HOURS.

JEWISH Music. See HEBREW Music.

JEWISH Nation. See HEBREWS.

JEWIT, RANDAL, or **RANDOLPH**, in *Biography*, a disciple of Orlando Gibbons, and bachelor of music in the university of Dublin, was organist of Christ-church in that city, where he was succeeded by Batefon.

In 1639, Jewit resigned his place at Dublin, where his successor was Benjamin, afterwards Dr. Rogers; and returning to England, he was appointed organist of Winchester, where he died after having acquired great esteem for skill in his profession.

JEW's EAR. See AURICULA Jude.

JEW's Frankincense, in *Botany*. See STYRAX.

JEW's Mallow. See CORCIORUS.

JEW's Stone, in *Natural History*. See LAPIS JUDAICUS.

JEW's Stone, in *Mining*, signifies basalt, win, or trap, in the collieries of Shropshire. See Plymley's Report on the Agriculture of that County, p. 61, &c.

JEWS, in *Geography and History*, an appellation which, in its most extensive sense, comprehends all the descendants of the celebrated patriarch Abraham, who was the father and founder of the Jewish nation; but, in its more restricted sense, it includes those who belonged to the tribe of Judah, and who inhabited Judea. Although they have been usually distinguished by this denomination, it is a name that was not given them till after the Babylonish captivity, when the tribe of Judah became the most considerable of what was left of Israel. In preceding times they were denominated Israelites, or more commonly Hebrews. For the etymology of this latter appellation, see HEBER. Under this title they occupied the *Land of CANAAN*, (which see,) whither their progenitor Abraham had migrated, and where he settled in the year B.C. 1921. (See ABRAHAM.) The subsequent possessors of it were the Israelites, so denominated from the name of Jacob, among whose 12 sons, forming so many distinct tribes, it was partitioned in the manner already stated under the article *Land of CANAAN*. (See also JUDAH, JUDEA, and PALESTINE.) When the patriarchal government, which seems to have subsisted in the early ages of the world, became impracticable (see PATRIARCHAL); the form of the Hebrew government underwent a material change, and was subject to various revolutions from the commencement of the national polity of the people of Israel, or Jews, to its final dissolution. While they sojourned in Egypt, it is natural to imagine, that as long as Jacob and

Joseph lived, they were their own masters, and were governed by their own laws; and though they were afterwards enslaved by the Egyptians, they nevertheless had some form of civil government among them, exercised by persons under the denomination of Elders; who are supposed to have been the wisest and gravest men, in the highest esteem among them, or, as Mr. Selden conjectures, the heads of their tribes. During their migration through the wilderness, from Egypt to Canaan, the Theocracy was established. (See THEOCRACY.) As God was their king, Moses was his viceroy, in whom the supreme power, ecclesiastical as well as civil, under God, was lodged. By him Aaron and his sons were put into the priesthood; the royal palace, or tabernacle, was built by his direction; by him it was consecrated; he gave the nation the whole body of their laws; he was commander-in-chief of all their forces. Whatever Moses did, he did by commission from God; and though he was only God's lieutenant or viceroy, he was, on account of an authority, which he held only in subordination to God, called king in Jeshurun. (Deut. xxxiii. 5.) Upon the entrance of the Israelites into the land of Canaan, B.C. 1451, under the conduct of Joshua, he became, in consequence of an oracular appointment, and in consequence of having been invested with the office, while Moses was living, the successor of Moses. (Numb. xxvii. 15—23.) And after his death, the people acknowledged Joshua for his successor, stipulating to render him that obedience which they had paid to Moses. (Josh. i. 16, 17.) In the year B.C. 1445, Joshua divided the land of Canaan among the 12 tribes; and died in the year B.C. 1426. Some have said that Joshua was succeeded by the Judges. But it has been doubted, and not without reason, whether the Judges were properly successors to Joshua in the same office, as he had been to Moses. The legislative office which Moses had possessed having expired at his death, so, it is said, did the office of Joshua, as "præfectus ordinarius," and captain-general for his life, at his. Upon this the Hebrew government became aristocratical; excepting that, in respect to the peculiar supremacy of Jehovah, it was monarchical. In the Hebrew commonwealth every city had its elders, who formed a court of judicature, with a power of determining lesser matters in their respective districts. Each tribe had also its respective prince; these are called the heads of the thousands of Israel (Numb. x. 4.), and were, perhaps, the same with the 12 captains of the host, mentioned in the 2d chapter of Numbers; and their office, therefore, related chiefly, if not entirely, to military affairs. We also read of the princes of the congregation, who presided in judiciary matters. (Numb. xxxii. 2. Josh. ix. 15. xvii. 4.) They are called elders, princes, and nobles, on account of the dignity of their office (Exod. xxiv. 9. 11.), and they were 70 in number. (Numb. xi. 16, 17. 24, 25.) See SANHEDRIM. As for the judges, of whom we read after the death of Joshua, they seem to have been appointed only on particular occasions; but were not "præfecti ordinarii," like Moses and Joshua; nor were they continued in their office during life, but only as long as there was occasion for their service. (See JUDGES.) The first of these judges was Othniel, who, in the year B.C. 1405, the 40th year after the peace established in the land by Joshua, gave rest to Israel. The 2d judge was Ehud the Benjamite, B.C. 1325; he was succeeded by Deborah the prophetess, B.C. 1285, who with Barak the general of the Israelites defeated the Canaanites under Sifera: the 4th judge was Gideon, B.C. 1245, who routed the Midianites, but declined the offer of kingly power: the 5th judge was Tola, B.C. 1233; the 6th was Jair, B.C. 1210; the 7th was Jephthah, B.C.

1188; the 8th was Ibzan, B.C. 1182; the 9th was Elon, B.C. 1175; the 10th was Abdon, B.C. 1165; the 11th was Eli, the high priest, B.C. 1157; the 12th and last judge was Samuel, B.C. 1116. (See CAPTIVITY.) We have here followed the chronology of Blair's Tables. The Judges were succeeded by kings, who were of two sorts; *viz.* those that reigned over the whole Hebrew nation, and who were only three, Saul, David, and Solomon; and those that reigned over some of the tribes only. Saul began his reign in the year B.C. 1095, and having reigned 40 years, was succeeded by Ishbosheth his son, who reigned seven years over part of Israel; and had for his successor David, who was anointed to be king after Saul by Samuel, B.C. 1093, and who became sole king, B.C. 1048. Having reigned wholly and in part 40 years, he was succeeded by his son Solomon, B.C. 1015, who died B.C. 975. After his death the kingdom was divided. The kings of the house of David, beginning with Rehoboam, were 20 in number, if we reckon Athaliah the queen, who usurped the throne for six years, after the death of her son Ahaziah. (2 Kings, xi.) These kings reigned over the two tribes of Judah and Benjamin, until Nebuchadnezzar carried Zedekiah, the last of them, captive to Babylon, B.C. 587. They took their title from the larger tribe, and were called kings of Judah. The kings of Israel, who reigned over the other ten tribes, from the time of their rebellion against Rehoboam, the son of Solomon, to the Assyrian captivity, were of several different families, and were in all 19 from Jeroboam, the first, B.C. 975, to Hoshea or Hoshai, the last, B.C. 721, when the Israelites were carried into captivity, and their kingdom terminated after a duration of 253 years.

As the Hebrew nation was divided into two distinct kingdoms, so each kingdom suffered a distinct captivity; the one called the Assyrian, the other the Babylonish. For an account of each, see CAPTIVITY.

When Cyrus, having conquered Babylon, and almost all the western parts of Asia, issued a decree B. C. 536, for the return of the Jews from their captivity and the rebuilding of their temple; many of them, particularly of the tribes of Judah and Benjamin, gladly availed themselves of the liberty; and some, even of the ten tribes, joined themselves to the rest, and returned with them to their own land. Many, however, chose to remain where they were; and indeed had been already so widely dispersed, during the years that had elapsed since the Assyrian captivity and formed permanent settlements, that they had neither opportunity nor inclination for returning with their brethren. Many enquiries have been made concerning the dispersed Jews of the ten tribes; and it has been till of late a prevalent opinion, that they were either wholly lost, or that they had at different times found their way in detached bodies to their own country. In consequence of some late discoveries, there is reason to believe, that they still exist in various parts of the East. Under the articles AFGHANS and CAPTIVITY, we have already stated the result of some enquiries with respect to the Jews of these tribes; and we have derived farther information from the researches of the Rev. Dr. Claudius Buchanan, lately published, Cambridge, 1811. Whilst this author was in the East, he heard that Jews existed in distinct colonies in certain parts of India; that some of them had arrived there long before the Christian era, and had remained in the midst of the Hindoos to this time a distinct and separate people, persecuted by the native princes from age to age, and yet not destroyed. The author also noticed the existence of an ancient colony of Jews on the coast of Malabar, particularly at Cochin. Being at Cochin in February 1807, he formed an acquaintance with the Jews; and found that they

live in a town about a mile distant from Cochin, called "Jews' Town." It is almost wholly inhabited by the Jews, who have two respectable synagogues. Jews from remote parts of Asia reside here, and as they have constant communication by ships with the Red sea, the Persian gulf, and the mouths of the Indus, this place is the fountain of intelligence concerning that people in the East. The resident Jews are divided into two classes, called the "Jerusalem or White Jews," and the "Ancient or Black Jews." The former reside at this place; the latter have also a synagogue here, but the great body of that tribe inhabit towns in the interior of the province. With regard to the history of the White Jews, our author obtained a written narrative, in the Hebrew language, of their arrival in India, which has been handed down to them from their fathers; and they exhibited to him an ancient brass plate, containing their charter and freedom of residence, given by a king of Malabar. Of their first arrival this narrative records, that after the destruction of the second temple, their fathers, dreading the conqueror's wrath, departed from Jerusalem, a numerous body of men, women, priests, and Levites, and came into this land. They had among them men of reputation for learning and wisdom; and God gave the people favour in the sight of the king who then reigned here, and he granted them a place to dwell in, called "Cranganor." He allowed them certain privileges, and the royal grant was engraved on a plate of brass. This was done in the year from the creation of the world 4250 (A. D. 490); and this plate of brass is still in their possession. "Our forefathers," they say, "continued at Cranganor for about 1000 years, and the number of heads who governed were 72. Soon after our settlement, other Jews followed us from Judea; and among these came that man of great wisdom, Rabbi Samuel, a Levite of Jerusalem, with his son Rabbi Jehuda Levita. They brought with them the "silver trumpets," made use of at the time of the "Jubilee," which were saved when the second temple was destroyed; and we have heard from our fathers, that there were engraven upon those trumpets the letters of the ineffable name. There joined us also from Spain and other places, from time to time, certain tribes of Jews who had heard of our prosperity. But at last, discord arising among ourselves, one of our chiefs called to his assistance an Indian king, who came upon us with a great army, destroyed our houses, palaces, and strong holds, dispossessed us of Cranganor, killed part of us, and carried part into captivity. By these massacres we were reduced to a small number. Some of the exiles came and dwelt at Cochin, where we have remained ever since, suffering great changes from time to time," &c. &c. The native annals of Malabar confirm the foregoing account in the principal circumstances; as do the Mahometan histories of later ages; for the Mahometans have been settled here in great numbers since the eighth century.

Our author farther informs us, that by looking at the countenance of the "Black Jews," you may be satisfied that their ancestors must have arrived in India many ages before the "White Jews." Their Hindoo complexion, and their very imperfect resemblance to the European Jews, indicate that they have been detached from the parent stock in Judea many ages before the Jews in the West; and that there have been intermarriages with families not Israelitish. The White Jews look upon the Black Jews as an inferior race, and as not of a *pure* cast; and this circumstance plainly demonstrates, that they do not spring from a common stock in Judea. The Black Jews gave our author much interesting information; and recounted the names of many other

small colonies resident in Northern India, Tartary, and China, and gave a written list of 65 places. Upon inquiring of them concerning the ten tribes, they said that it was commonly believed among them, that the great body of the Israelites are to be found in Chaldea; and in the countries contiguous to it; being the very places whither they were first carried into captivity; that some few families had migrated into regions more remote, as to Cochin and Rajapoor in India, and to other places yet farther to the East; but that the bulk of the nation, though now much reduced in number, had not to this day removed 2000 miles from Samaria. Our author afterwards made a tour through the towns of the Black Jews, in the interior of the country, Tritoor, Paroor, Chenotta, and Maleh; and he found many MSS., chiefly in the Rabbinical character. One of these is an old copy of the books of Moses, written on a roll of leather. The skins are sewed together, and the roll is about 48 feet in length. Some of the Jews suppose that this roll came from Senna, in Arabia; others have heard that it was brought from Cashmire. The Cabul Jews, who travel into the interior of China, say, that in some synagogues the law is still written on a roll of leather made of goats' skins dyed red; not on vellum, but a soft flexible leather.

Whilst our author was amongst the Jews of Malabar, he made frequent inquiries concerning the ten tribes. When he mentioned, that it was the opinion of some that they had migrated from the Chaldean provinces; he was asked to what country we supposed they had gone, and whether we had ever heard of their moving in a great army on such an expedition. It will be easy perhaps to shew that the great body of the ten tribes remain to this day in the countries to which they were first carried captive. We learn from Josephus, who lived in the time of Vespasian, and who recites a speech made by king Agrippa to the Jews, exhorting them to submit to the Romans; that the ten tribes were then captive in Media under the Persian princes; and Jerome, in the fifth century, treating of the dispersed Jews in his notes on Hosea, says, unto this day the ten tribes are subject to the kings of the Persians, nor has their captivity ever been loosed. And again, the ten tribes inhabit at this day the cities and mountains of the Medes. No family dares to leave the kingdom of Persia without permission of the king. In the provinces of Cashmire and Affghanistan, some of the Jews submitted to great sacrifices, and remain Jews to this day; but the greater number yielded, in the course of ages, to the power of the reigning religion. Their countenance, their language, their names, their rites and observances, and their history, all conspire to establish the fact. Mr. Forster (Travels) was so much struck with the general appearance, garb, and manners of the Cashmirians, as to think, without any previous knowledge of the fact, that he had been suddenly transported among a nation of Jews. The tribes of the Affghan race are very numerous, and of different casts, extending on both sides of the Indus, and the mountainous region, which commences in Western Persia; some of these tribes are evidently of Jewish extraction. Our author, however, concludes upon the whole, that the greater part of the ten tribes, which *now exist*, is to be found in the countries of their first captivity. But to return from this digression—

Although some of the ten tribes returned on the occasion above-mentioned, most of them remained among the heathens. This appears to have been the case in the reign of Artaxerxes Longimanus, supposed by Prideaux to be the Ahasuerus mentioned in the book of Esther, and this must have been nearly eighty years after their first return in the reign of Cyrus, B. C. 458. It was at this time that Ezra

obtained an ample commission from Artaxerxes for his return to Jerusalem, with all of his own nation who were willing to accompany him. (Ezra, ch. vii.) Upon this many more of the Jews returned to their own land. Nevertheless, few of the ten tribes, in comparison of those of Judah and Benjamin, ever returned from their dispersion. It appears, that at the time of Haman's conspiracy, probably four or five years after the second return under Ezra, there was a multitude of the Jews dispersed through the various provinces of the Persian empire; besides those who had mingled with idolaters and embraced their religion. Ezra, who was governor of the Jews in their own land for thirteen years, was succeeded by Nehemiah, who had a new commission granted him by Artaxerxes in the 20th year of his reign, B. C. 445, with full authority to repair the wall of Jerusalem, and to fortify it in the same manner as before it was dismantled by the Babylonians.

The Jews, who, after the return from the captivity, were settled again in their own land, were no longer divided into two kingdoms, but formed one people under one government, which varied in its form through several succeeding ages. Upon their return from the captivity, Judea became a province of Syria, tributary to the sovereign of the Persian empire. But though tributary, the Jews enjoyed their own religion, and were governed by their own laws; and their governors, though they acted by virtue of a commission from the court of Persia, were, nevertheless, of their own nation; as Zerubbabel, Ezra, and Nehemiah; so that the administration of the Jewish state was committed to their high-priests. This state of things, and this form of government, continued for upwards of 200 years, until the time of Alexander the Great, who, having destroyed the Persian empire, B. C. 331, and established the Grecian universal monarchy, reduced the Jews into a state of subjection to him and his successors. But they were not properly conquered by him, as the other nations were; but obtained his protection in the singular manner related by Josephus, Antiq. l. xi. c. 8. 5. 3—5. edit. Havre. (See JERUSALEM.) Jaddua, the Jewish high-priest, having ingratiated himself with Alexander by his prudent conduct, and by shewing him the prophecy of Daniel, which predicted the overthrow of the Persian empire by a Grecian king, and being ordered to request on behalf of the Jews whatever was agreeable to them, petitioned that they might enjoy their own laws and religion, and be excused from paying tribute every seventh year, because in that year they neither sowed nor reaped. All this was freely granted by Alexander. After the death of Alexander, the Jews became subject and tributary to the kings of Egypt or Syria, as by various events one or the other extended their dominion to Judea, which lay between these two countries. After a severe contest, Judea was subdued by Ptolemy, and 100,000 Jews were made captive; but afterwards, reflecting on their accustomed fidelity to their conquerors, he restored to them all the privileges which they had enjoyed under the Macedonians. Five years after the subjugation of Judea by Ptolemy, he was forced to surrender it to Antigonus, the Macedonian general, who treated the Jews in a manner so tyrannical, that many of them fled into Egypt, and others put themselves under the protection of Seleucus Nicator, king of Syria, who granted them considerable privileges. At this time Judea seemed to be in danger of depopulation, till it was recovered by Ptolemy Soter in the year B. C. 292. The prosperity of the Jews, however, was of short duration; for under the reign of Ptolemy Philopator they were grievously oppressed by the incursions of the Samaritans, whilst Antiochus Theos, king of Syria, invaded Galilee. Antiochus, how-

ever, was defeated by Ptolemy, who, being resisted by the Jews in his attempt to profane the temple, raised against them a dreadful persecution; but this persecution being stopped, the Jews were again received into favour. When Ptolemy Epiphanes succeeded his father Philopator, B.C. 204, Antiochus, the great king of Syria, invaded Palestine; and the Jews, unmindful of their obligations to the kings of Egypt, joined the invader. In recompence of the services which they rendered him, Antiochus proposed to restore their metropolis to its ancient splendour, liberty, and privileges, and to recal all those Jews who had been driven out of it; and from singular respect to the temple of their God, he granted them 20,000 pieces of silver towards the charges of their worship, 1400 measures of fine wheat, and 375 measures of salt, for their usual oblations. He also declared his intention to repair the temple at his own cost, to allow them the free exercise of their religion, to restore the public service, and the priests, Levites, &c. to their usual functions; and besides other privileges which he conferred upon them, he granted an exemption from all taxes for three years to all the dispersed Jews that should come within a limited time to repeople that metropolis. By these and other extraordinary favours, Antiochus so attached the Jews to his interest, that Judea, and the other neighbouring provinces, readily submitted to him. Upon the death of Antiochus, their friend and protector, B.C. 187, they found as kind a patron in his son and successor, Seleucus Philopator. Judea at this time enjoyed a profound peace, and their laws were observed with great strictness under their worthy high-priest, Onias III., until a misunderstanding, which occurred between him and Simon, a Benjamite, who had been made governor of the temple, brought a series of evils on the Jewish state. Simon treacherously communicated information to Seleucus, that the temple of Jerusalem contained immense treasures, which might be seized for his use. Heliodorus was dispatched to Jerusalem for this purpose; and having acquainted Onias with the king's orders, which he was commissioned to execute, the priest remonstrated, and endeavoured to dissuade him from any attempt of this kind. Heliodorus, however, endeavoured to force the temple, but whilst the Syrians were endeavouring to enter, they were smitten with such a panic, that they fell down half-dead. When the traitor Simon found that he had missed his aim, he laid the whole blame on the good high-priest, pretending that he was the person who had called Heliodorus to Jerusalem, and thus raised a party against him. Onias, fearing the consequences of such a faction, went to Antioch to complain of this outrage to the king. He was well received, and Simon was banished; but Seleucus, dying soon after, B.C. 175, was succeeded by his son Antiochus Epiphanes, generally supposed to be that "vile person," of whom Daniel prophesied under that appellation (chap. xi. 21, &c.), and he actually proved altogether as profane and cruel as the prophet represents him; for he laid siege to Jerusalem, and took it by storm, and in the course of two days massacred 40,000 of its inhabitants, and sold as many more to the neighbouring nations for slaves. He impiously found his way into the temple, and into the holy of holies; he sacrificed a great sow upon the altar of burnt-offerings, and caused broth to be made of some part of the flesh, and to be sprinkled all over the temple. He afterwards plundered the sacred edifice of all its golden and silver vessels and utensils, to the value of 1800 talents of gold; and having made a similar plunder in the city, he left it, after he had, to the further vexation of the Jews, appointed Philip, a Phrygian, to be their governor, who was a man of a cruel and barbarous temper; and the apostate

Menelaus, the brother of Onias, who had been basely murdered, in the possession of the high priesthood, B.C. 170. It would be tedious to enumerate the horrid acts of cruelty which were committed under the authority and direction of Antiochus, than whom we cannot conceive a greater monster of barbarity. Not satisfied with the savage and brutal measures that were executed against the Jews, he determined either totally to abolish their religion, or to exterminate their whole race. Accordingly he issued a decree, that all nations within his dominions should conform to his religion, and worship the same God, and in the same manner that he did, under the severest penalties. This decree being levelled chiefly against the Jews, he sent commissioners to execute it in Judea. One of these, named Apelles, came to Modin, where dwelt Mattathias, a very honourable priest, and zealous for the law of his God; he was the great-grandson of Asmonæus, from which circumstance the family probably derived the name of Asmonæans. This Mattathias, with his five sons, were tempted, by the most ample promises of protection and favour, on the part of the king, to renounce their religion. But he contemned the offer, and magnanimously declared, that if the whole Jewish nation, and even the whole world, were to conform to the king's edict, he and his sons would continue faithful to their God to the last moment of their lives. At the same time, perceiving one of his countrymen just going to offer sacrifices to an idol, he fell upon him and instantly killed him, agreeably to the requisition of the Mosaic law in cases of that kind. Upon this, his sons, actuated by similar zeal, killed the king's officer and his men; overthrew the altar and idol; and running about the city, cried out, that those who were zealous for the law of God should follow them. They then retired into the mountains, whither they were followed by many of the Jews; and having there formed an army, stood upon their defence. Afterwards, leaving their fastnesses, they went about the country destroying the heathen altars and idolaters, and restoring the worship of God according to the law, wherever they came. Mattathias, who died B.C. 166, was succeeded by his son Judas, surnamed Maccabeus (see Maccabees), who was one of the most distinguished heroes of whom the Jews can boast. His army consisted only of 6000 men; but the deficiency of number he supplied by his zeal and bravery. Of his signal exploits and various conquests, we cannot here give a minute detail. It must suffice to observe, that having rid the province of Judea of the enemy, he marched to the metropolis, purified the city and temple, restored the altars, holy place, and worship; commencing the religious service with the dedication of the new altar, and other holy utensils, which was performed on the 25th day of the month Cisleu; the same day in which it had ceased by the profanation of the temple three years before, and in the second year of Judas's government. The news of Judas's success exasperated Antiochus Epiphanes almost to madness; and he still retained his purpose of extirpating the Jewish race. But he had scarcely uttered his purpose, before he was seized with a pain in his bowels of the most excruciating nature, and this disease, accompanied with still more agonizing reflections and feelings of mind, terminated in his death, B.C. 164. Judas still pursued his successful military operations; till at length the Syrians were under a necessity of suing for peace, B.C. 163. This year, in Blair's Tables, is the era of the government of Judea by the Asmonæans or Maccabees, which lasted 126 years. The peace between the Syrians and Judas was of short duration. Upon the renewal of the war, Judas defeated them in five engagements; but in the 6th he was abandoned by all his men except 800 who, together with

their chief, were slain in a severe contest, which lasted from morning till evening, B.C. 161. The Jews were much afflicted by the death of Judas. He was succeeded, however, by his brother Jonathan, who conducted their concerns with no less prudence and success than Judas, till, after having governed the Jewish state near 17 years, he was decoyed into the power of Tryphon, a Syrian usurper, and soon after murdered, B.C. 144. Simon, the only surviving son of Mattathias, succeeded his brother Jonathan: who frustrated all the hostile designs of the traitor Diodotus, called Tryphon, against Judea. Simon was not only appointed commander-in-chief of the forces of the Jews, but promoted to the dignity of high-priest, in which office he was solemnly installed. This pontiff renewed the alliance with Rome and Sparta; repaired and fortified all his garrisons, especially that of Bethsura, on the confines of Judea; took Joppa and Gaza; and drove out the Syrian garrison from Acra, the fortress of Jerusalem. The wife of Demetrius, who had been driven from his dominions, and kept prisoner by the Parthians, despairing ever to recover her captive husband, invited his brother Antiochus to make an effort for gaining the Syrian crown. Upon his arrival, he sent a very obliging letter to the Jewish high-priest, in which he confirmed to him all his dignities, revenues, and authority; and to his nation all the freedom and immunities which had been formerly granted by his brother to them, or which they now actually possessed. To this he added, besides many great promises, a power of coining their own money in Judea, of which that pontiff immediately availed himself. But when that prince had established himself on the throne by the marriage of Cleopatra, and the death of Tryphon, Simon, either suspecting the sincerity of his late promises, or being desirous of making his friendship to him appear more considerable, sent a fresh embassy to Rome, to renew and strengthen his alliance with that nation. Simon was at last treacherously murdered by his son-in-law Ptolemy, about the year B. C. 135. The successor of Simon, both as prince and high-priest, was his son Hyrcan, who immediately adopted measures for the safety of his own person, as well as that of the city and country. Having succeeded in throwing off the Syrian yoke, he turned his arms against the Samaritans, took their capital Samaria, made himself master of Palestine, and added to it all the provinces of Samaria and Galilee; all which he enjoyed to the end of his life. His reign was no less remarkable on account of his great wisdom and piety at home than his conquests abroad. Never did the Jewish religion or commonwealth appear with greater lustre since the return from the captivity; but that which raised his glory above any of his predecessors, or successors, was, if we may believe Josephus (Bell. Jud. l. ii. c. 3.), and the 4th book of Maccabees, his enjoying three dignities, which never all concurred in any one besides himself; *viz.* the royal dignity, the high-priesthood, and the gift of prophecy. Of the last-mentioned, however, the instances that are produced are very equivocal and liable to great suspicion. The last year of Hyrcan's reign was much embittered by a quarrel with the Pharisees, to whom he had been always partially attached; and this contention is thought to have shortened his days. One of the Pharisees suggested a doubt of his legitimacy, alleging that his mother had formerly been a slave, and consequently, that he was incapable of enjoying the high-priesthood. This report was credited, or at least pretended to be so, by the whole sect; and it irritated Hyrcan to such a degree, that he joined the Sadducees, and could never afterwards be reconciled to the Pharisees, who occasioned all the troubles and seditions that disturbed the closing period of his life. Hyrcan died in the year B. C. 107; and was succeeded by

his son Aristobulus, who manifested himself to be a most cruel and barbarous tyrant. His power was happily of short duration; for in the year B. C. 106, he was succeeded by his brother Alexander Jannæus, who was, next to king David, the greatest conqueror that ever sat on the Jewish throne. His abode at Jerusalem was rendered very undesirable by the tumults excited by the Pharisees; and he therefore left the city to such foreign enemies and conquests. During his absence the Pharisees raised a rebellion at home, which was terminated in the year B. C. 86, when the rebels were treated with great inhumanity. Alexander, having made several conquests in Syria, died in the year B. C. 79. Although he left two sons, Hyrcanus and Aristobulus, he bequeathed the government of the kingdom to his wife Alexandra during her life, and then to either of his sons whom she might think proper to appoint. The Pharisees disquieted her administration; and nothing less would satisfy them than the total extermination of their adversaries, the Sadducees, who were grievously persecuted for four years, and then, for their future security, dispersed among the several garrisons of the kingdom. When her death seemed to be approaching, Aristobulus collected a party to secure the crown to himself; but the queen, having before made Hyrcanus high-priest, appointed him to succeed her in the royal dignity. At her decease, she left her two sons competitors for the crown. In a contest between the two brothers, Hyrcanus was compelled to abandon all title both to the royal and pontifical dignity. His party, however, was not extinguished. Antipater, father of Herod the Great, took part with Hyrcanus, and having carried him off into Arabia, under a pretence that his life was in danger in Judea, he interested Aretas, king of that country, in his behalf; who, with a view of restoring him to the throne, invaded Judea; and defeated Aristobulus. This prince had recourse to the Romans, who, under the command of Scourus, defeated Aretas, with the loss of 7000 men, and drove him out of the country. The two brothers afterwards appealed to Pompey, who was at that time commander-in-chief of all the Roman forces in the East, and made him the arbitrator of their differences. He deferred giving an opinion, with a promise that, as soon as he had subdued Aretas, he would come into Judea and divide their controversy. Aristobulus was offended, and on the other hand Ptolemy resented the want of respect on his part, and, entering Judea with his troops, summoned Aristobulus to appear before him. From the behaviour of Pompey, Aristobulus perceived that he was in the interest of his brother, and accordingly he fled to Jerusalem, with a design of exerting himself to the utmost of his power against the Romans. Pompey followed him, and soon brought him to abject submission. The citizens of Jerusalem demurred, and the garrison shut the gates against Pompey. Exasperated by this conduct, he besieged and took the city, B. C. 63, and restored Hyrcanus to the priesthood and also the government, with the title of "Prince;" but forbidding him to assume that of "King," to wear a diadem, or to extend his territories beyond the limits of Judea. Pompey, having thus subdued the Jewish nation, set out for Rome, and carried with him Aristobulus, with his two sons, Alexander and Antigonus, and his two daughters, to adorn his future triumph. Alexander, however, found means to make his escape into Judea, where he raised an army, and having fortified some strong holds, made incursions into the neighbouring country. Hyrcanus sunk into his natural indolence, and left the management of public affairs to Antipater, who, for purposes of personal and family aggrandizement, ingratiated himself with the Romans. Hyrcanus was in no condition to oppose Alexander; and there-

fore again besought the assistance of the Romans. Alexander ventured a battle, and was defeated; but, by the interest of his mother with the Roman general, obtained a pardon for his past aggressions. Hyrcanus was again restored to the pontifical dignity; and the province was divided into five districts, having each a separate court of judicature. The first of these was at Jerusalem; the second at Gadara; the third at Amath; the fourth at Jericho; and the fifth at Sephoris in Galilee. The government of Judea was now changed into an aristocracy. The war between Pompey and Cæsar afforded the Jews some respite; and favoured the ambitious projects of Antipater. Cæsar confirmed Hyrcanus in his priesthood; added to it the principality of Judea, which was entailed on him and his posterity for ever; and restored the Jewish nation to their ancient rights and privileges; and soon after, when Cæsar himself came into Judea, he granted liberty to fortify the city, and to rebuild the wall which Ptolemy had demolished. During the life of Cæsar the Jews were highly favoured, and might be said scarcely to feel the Roman yoke; but after his death, B. C. 44, their condition underwent a material change. Antigonus, son of Aristobulus, brother of Hyrcanus, by means of some friends he had among the Jews, and by the assistance of the Parthians, made himself master of Jerusalem and all Judea, and took Hyrcanus prisoner, who was put into the hands of the Parthians. This circumstance, and several others occurred, which embroiled Judea; nor were the tumults and disorders of this province quelled till Herod visited Rome, and was created king of Judea by the friendship and interest of Marc Antony and Octavius, in the year B. C. 40. The view of Herod, in his journey to Rome, was to obtain the kingdom of Judea for Aristobulus, brother of his wife Mariamne, by his father, grandson of Aristobulus, and by his mother, of Hyrcanus. But the senate of Rome, by the recommendation above-mentioned, and also moved by some reasons of state, conferred the kingdom of Judea upon Herod. Having had this unexpected success at Rome, he returned with all expedition to Judea, and in about three years' time, B. C. 37, got possession of the whole country. When Jerusalem was taken by Sosius and Herod, and by the death of Antigonus, beheaded by order of Marc Antony, at the request of Herod, the Asmonean family terminated, 126 years after Judas Maccabæus. Herod was a persecutor and tyrant; he began his reign with the death of many of the adherents of his rival Antigonus, and with the confiscation of their effects. He also decoyed Hyrcanus, the banished pontiff, from Parthia, that, notwithstanding his most solemn promises to the contrary, he might put him to death. His own family did not escape his cruelty. He had married Mariamne, the daughter of Hyrcanus; whose brother, Aristobulus, was made high-priest at the intercession of his mother; but the tyrant, knowing that Aristobulus had a better right to the kingdom than himself, caused him to be drowned in a bath; and then sacrificed his own wife Mariamne. Her death was soon followed by that of her mother Alexandra, and this by the execution of several other persons, who had united their endeavours with her's for securing the kingdom to the sons of the deceased queen. His contempt of the Jewish ceremonies, and introduction of a number of heathenish games, exposed him to the danger of assassination; but the conspirators, failing in their attempt, were afterwards discovered by some women, who were put to the rack, and sentenced to suffer death, together with their families. Having thus disposed the people to a revolt, he found it necessary to fortify Jerusalem with additional works, to rebuild Samaria, and to garrison several fortresses in Judea. Although the relief which he

afforded to his subjects in a time of famine served in some measure to allay their hatred and animosity; yet, by relapsing into his former cruelty, their hatred of him was renewed, nor did it subside till his death. About the year B. C. 23, he began to adorn the chief cities with sumptuous buildings, and to rebuild the temple. (See JERUSALEM and TEMPLE.) But all these works were not sufficient to divert the king's attention from his usual jealousy and cruelty. Prompted by his sister Salome, and one of his sons, Antipater, he murdered his two sons by Mariamne, Alexander and Aristobulus; but his cruelty and jealousy were pre-eminently displayed in his attempt to destroy the Saviour of the world. At length he was seized with a loathsome and incurable disease, which terminated in his death, very much to the joy of his subjects, Nov 25th, B.C. 4. He had previously put Antipater to death, and divided his kingdom among his sons in the following manner: Archelaus had Judea, but his power did not extend over the whole land of Israel, and particularly not to Galilee; Antipas, or Herod, was tetrarch of Galilee and Perea, and so continued till he was removed by Caligula, the successor of Tiberius (see HEROD-ANTIPAS); and Philip had the regions of Trachonitis, Gaulonitis, Batanea, and Pnias, which he erected likewise into a tetrarchy, and governed 37 years, till his death in the 20th year of Tiberius. For other particulars relating to Herod the Great; see his article. The death of Herod was followed by insurrections and tumults. Archelaus was opposed by his brethren, and obliged to appear at Rome before Augustus, with whom many complaints were lodged against him. (See ARCHELAUS.) Upon the banishment of Archelaus, A.D. 6 or 7, Judea was reduced to a Roman province, and put under the government of Roman officers sent from Rome; and appointed to be a branch of the province of Syria. But in order to keep this country of Judea in good order, there was an officer, with the title of procurator, sent by Augustus, to reside and govern there, invested with the supreme authority, or, as Lardner says, the power of life and death. The first of these was Coponius, the next Marcus Ambivivus, his successor Annus Rufus, in whose time Augustus died, A.D. 14. The next was Valerius Gratus, who was appointed procurator by Tiberius, and continued in the province 11 years; and was then succeeded by Pontius Pilate, who governed Judea during a period of ten years, which expired some time before the passover, A.D. 36. After the removal of Pilate, for about four or five years at the most, it may be questioned, whether the Jews had now any procurator residing among them with the power of life and death, as they had from the year of our Lord 7, to the year 36 or 37. But however this be, it is certain that they were subject to the Romans. For when the Samaritans, with whom the Jews are supposed to have joined, waited upon Vitellius, the president of Syria, intreating that Pilate might be removed, they made very solemn professions of their willingness to continue under the Roman government, and only complained of the tyranny of Pilate. Dr. Lardner is of opinion, however, that they had no procurator residing among them from the time of Pilate's removal to Agrippa's accession to the kingdom of Judea, in the reign of Claudius. In considering the circumstances of the Jews in their own country at this time, as it is described by the writers of the New Testament, and other ancient authors, we may regard both their religious and civil state. That they had, according to the sacred writers, the free exercise of their religion, is evident from the whole tenor of the history contained in the Gospels and the Acts of the Apostles. They had their synagogues, in which the law and the prophets were read; and

in which our Saviour taught. In the whole history of our Saviour's ministry there is no mention of any restraint, or obstruction which they met with in their worship, except that which occurs in Luke, xiii. 1. It appears also probable that they were at liberty to perform all their religious services, if we consider, that the Romans always permitted the people conquered by them to practise their own religious rites in their own way; nor do they seem to have departed from this principle till after the period of the evangelical history. Josephus also assures us of this fact. The Roman governors did, indeed, sometimes offer abuses, or suffer abuses to be committed in the country, contrary to the institutions of the law; and they also injured them with respect to their civil property. But these abuses do not seem to have been very numerous; when any were committed, it was without the emperor's authority; and, usually, the Jews at length obtained satisfaction. In considering the civil state of the Jews, Dr. Lardner distributes their history into four periods; *viz.* the first, which reaches from the preaching of John the Baptist to our Saviour's resurrection; the second, from thence to the time of Herod, the king, mentioned Acts, xii.; the third, the reign of this Herod; and the fourth, from the end of this reign to the conclusion of the evangelical history. In the investigation of this subject, and the conclusions resulting from it, learned men have entertained different opinions; particularly with regard to the extent of the power and authority possessed by the Jews, and with respect to the question, whether they had the power of life and death, or only a right to inflict some lesser penalties. This enquiry should be restricted to the state of the Jews in Judea, properly so called; and therefore it does not comprehend the beheading of John the Baptist, which was perpetrated by Herod, tetrarch of Galilee, son of Herod the Great; who, without doubt, had the power of life and death, however he abused it, in his own territories. With reference to the first period, we are assured by all the evangelists, that our Saviour was brought before Pilate, governor in Judea, during the whole time of our Saviour's ministry, and condemned by him; and he was crucified by Pilate's officers; and yet the Jews are more than once said to have crucified Christ, because his death was owing to their prosecution and importunity. Nor is it uncommon to ascribe to men not only those things which they themselves do, but those also which are brought about by their means. For the particular illustration of this subject, we must refer to Lardner's Works, vol. i. ed. 8vo. After adducing and examining, with his usual accuracy and impartiality, the main passages of this period, concerning the power which the Jews possessed in their own country, he concludes with the following summary. They practised their own religious rites, worshipped at the temple and in their synagogues, followed their own customs, and lived very much according to their own laws. They had their high priests, council or senate; inflicted lesser punishments; they could apprehend men, and bring them before the council; and if a guard of soldiers was needful, could be assisted by them, upon asking the governor for them; they could bind men and keep them in custody; the council could summon witnesses, take examinations, and when they had any capital offenders, carry them before the governor. This governor usually paid a regard to what they offered; and, if they brought evidence of the fact, pronounced sentence according to their laws. But he was the proper judge in all capital causes; for when the council of the Jews had before them a case, which they pretended to be of this kind, having prepared it, they went with it immediately to the governor, who re-examined it, and pronounced the sentence. Our learned author has examined and ma-

turely considered the various occurrences of the three subsequent periods, and satisfactorily shewn, that whatever power the laws exercised with regard to the infliction of lesser penalties, and however tumultuously and illegally they might have acted in particular cases, they had no power of life and death. The arguments deduced from the facts stated by the evangelical historians are farther confirmed by the testimony of ancient writers. Ulpian, a famous Roman lawyer, expressly says, "The magistrates of municipal places (see *Municipal Cities*) may not punish a slave with death; but the inflicting lesser penalties is not to be denied them." This single authority is sufficient to decide the question. The Jews lived according to their own laws, as municipal people did; but then, if these last, who were Roman citizens, had not the right of punishing a slave with death, certainly the Jews had not, whilst under the Roman government.

Soon after Pilate's deposition, Caius Caligula promoted his old friend Agrippa to the regal dignity; but he did not long enjoy this honour. (See *AGRIPPA*.) On his death, A.D. 44, Judea was made a Roman province by Claudius, who sent Cuspius Fadus thither as governor; he was succeeded by Tiberius Alexander, an apostate Jew of sacerdotal race, and nephew to the famous Philo. The subsequent governors were Ventidius Cumanus, Claudius Felix, mentioned Acts, xxiv., Portius Festus, before whom Paul made his famous defence (Acts, xxv. xxvi.), Albinus, nominated by Nero, who suppressed the Sicarii, or those robbers who were at this time become very numerous in Judea, and Gessius Florus, the last and worst governor that Judea ever had, whose atrocious conduct prepared the way for that war, which terminated with the total ruin of the Jewish nation. During his flagitious government, great numbers of Jews forsook the province, and sought an asylum among foreign nations; whilst those that remained applied to Cestius Gallus, governor of Syria, who was at Jerusalem at the passover, beseeching him to pity their wretched state, and free them from the tyranny of a man who had totally ruined their country. The number of people at Jerusalem was found by computation to amount to 2,556,000. Josephus thinks they rather amounted to 3,000,000. In May, A.D. 66, began the Jewish war with the Romans; it took its immediate rise from a contest between the Jews and Syrians concerning the city of Cæsarea. The Jews maintained that it belonged to them, because it had been built by Herod, and the Syrians pretended that it had been always considered as a Greek city. The decision of the dispute was referred to Nero, whose determination produced an insurrection on the part of the Jews, which rapidly spread through the whole country. Robberies, murders, and every kind of cruelty prevailed. The Jews, on their part, spared neither Syrians nor Romans, but retaliated their cruelties wherever they occurred. The Cæsareans fell suddenly on the Jews of their city, and massacred 20,000 of them; 2000 were murdered at Ptolemais; and 50,000 are said to have been slaughtered at Alexandria. At Jerusalem, Florus caused his troops one day to plunder the high market, and to kill all they met; and accordingly they murdered 3500 persons, men, women, and children. In the mean time a great number of assassins, having joined the rebels, drove the Romans out of the fortresses of Massada, Antonia, and the towers of Phasaël, Mariamne, and others. They set fire to the palaces of Agrippa, Berenice, the high priest Ananias, and his brother Ezechias; and these two last persons they murdered without mercy. The revolted Jews extended their conquests beyond Jordan, and took the fortresses of Machæron and Cyprus, which last they razed to

the ground, after having put all the Romans to the sword. At length Cestius Gallus was roused; and having marched into Judea with a powerful army, burned all the towns and villages in his way, massacred all the Jews he could find, and pursued those that escaped and that were in arms, almost as far as Jerusalem. The Jews were thrown into such consternation, that they abandoned all the outer quarters of the city, and retired into the inner cincture near the temple. Cestius set fire to the former, and resolving to besiege the latter, took up his head-quarters in the royal palace. Instead of pushing on the siege, it was shamefully raised by the advice of some generals of Cestius, whom Florus had corrupted; so that the insurgents, recovering their spirits, pursued him to Gideon, and defeated him with great slaughter. The Jews now deliberated concerning the best means of carrying on the war against the Romans, and appointed some of their bravest chiefs to command the several cantons and fortresses of Judea. Josephus, the writer of these wars, was appointed governor of the two Galilees; Joseph, the son of Gorion, and the high-priest Ananus, had the government of Jerusalem; and to Eleazar, the chief of the revoltors, was assigned that of Idumæa. In the mean while there reigned such dissention among the Jews, that many of the better sort, foreseeing the bad effects of the resentment of the Romans, forsook the city. The Christians retired into Pella, a small city on the other side of Jordan, in the tetrarchy of Herod, whither the war did not reach. When Nero received advice of the state of affairs in Judea, he nominated Vespasian, who had signalized himself in Germany and Britain, to march with all speed against Judea with a powerful army. He accordingly repaired to Syria, where he collected all his forces and those of his auxiliaries, while his son Titus was sent to fetch the fifth and tenth legions from Alexandria to Judea. Before their arrival, 10,000 of the Jews, who besieged Ascalon, were killed by Antony; and on a second attempt their loss was doubled. In the beginning of the year 68, Vespasian, joined by Titus, entered Galilee, with a force of 60,000 well-disciplined men; and having burnt Gadara, advanced to besiege Jotapa. Josephus, governor of that province, having previously supplied the place with stores, defended it with great bravery 47 days; but it was at length taken by assault, and the garrison were put to the sword. All the Jews were murdered or made prisoners. Forty thousand are said to have been slain, and Josephus was among the prisoners. As soon as the news of the capture of Jotapa reached Jerusalem, the Jews, who heard that Josephus was among the slain, made great lamentations for the loss of him for a whole month; but when they were informed that he had surrendered himself a prisoner to the Romans, they began to consider him as a base betrayer of their country; and to persecute him with the most irreconcilable hatred and disdain. The Romans pursued their conquests; and after the reduction of Tarichea and Tiberias, all the other cities of Galilee submitted to the Romans, except Gischala and Gamala, and the mountain of Itabyr. These places were at length taken with great loss to the Jews; and the reduction of Gischala having completed the conquest of Galilee, Titus rejoined his father at Cæsarea, where their troops had some respite before they undertook the siege of Jerusalem. At this time the Jewish nation was divided into two very opposite parties; one, which wished to submit to the Romans, and another, sprung from the Gaulonitish incendiary, called the Zealots, which breathed nothing but war, confusion, and cruelty. This latter party committed the most horrid acts of plunder and massacre; and took possession of Jerusalem. After having butchered all persons of any distinction or character, they began to

wreak their rage on the common people who opposed them. This savage despotism obliged many of the Jews to forsake Jerusalem and take shelter under the Romans, though they did it at the hazard of their lives, the gates and avenues of the city being so closely guarded that it was extremely dangerous to retire, and many who were caught in the attempt were immediately put to death. Vespasian remained at Cæsarea an inactive spectator of the dismal condition of the Jewish nation. At length the Zealots themselves divided into two factions; the most profligate of them joined John of Gischala, and others opposed him. During this anarchy, there arose in the country a new gang of Sicarii, who, having seized the strong fortresses of Massada, arranged themselves under a bold adventurer, called Simon, and made this their place of retreat. These plundered, burned, and massacred every where, and carried their booty into that place. Nero, about this time, A.D. 68, put an end to his life at Rome: and Vespasian was busily employed in making preparations for the siege of Jerusalem. In the mean while Simon, at the head of a great army, committed hostilities against the Zealots; and having successfully invaded Idumæa, posted his army at the gates of Jerusalem. Simon without, and John within, vied with each other in their crimes and cruelties. At length Simon was, by an act of treachery, admitted into the city, where he laboured to make his authority absolute. Whilst Judea was thus miserably distracted with foreign and intestine wars, the Roman empire was in a state of great confusion. But as soon as Vespasian was chosen emperor, A.D. 69, he restored a calm to the empire. Josephus, who had previously apprised him of his advancement to the throne, began to reap the benefits of his anticipation. The emperor, recollecting his predictions, recompensed his fidelity with many signal favours. As soon as Vespasian received intelligence that his election was confirmed at Rome, he left the best of his troops with his son Titus, with orders to besiege Jerusalem and to destroy it utterly; and then he prepared for returning to the capital of his empire. The Jewish dissensions in the mean while increased. Three factions subsisted in Jerusalem, which were incessantly contending with and weakening each other: till at length Titus, with four legions under his command, marched against the city in different directions. On his approach, the persons who composed the three factions, seeing that they were besieged by so powerful an army, under so brave a general, thought it necessary to unite in a vigorous defence against the common enemy. It was not long, however, before their union was dissolved; and one faction being destroyed, Simon and John sometimes made united sallies against the besiegers, and at other times turned their arms against one another, as if they had pledged themselves to make their ruin more easy to the Romans. The process of the siege we shall not here minutely describe; some notice has already been taken of it under the article JERUSALEM; and for a fuller account we refer to Josephus (Bell. Jud. lib. vi. cap. 7.): The siege commenced in April, and lasted till the 8th of September, A. D. 70, when the city was taken and entered by Titus. According to Josephus, the number of prisoners amounted to 97,000, besides about 11,000, who were either starved through neglect, or starved themselves through fullness and despair. Suetonius and Cornelius Nepos reckon but 600,000 slain and prisoners in the course of this war; but they lived at a distance, and were less competent to give a just estimate of the number than Josephus, who was a party and an eye-witness; though he is thought to have exaggerated in compliment to Titus and the Romans. From the computation of Justus Lipsius, on the authority of Josephus, the whole number

of the Jews that perished in the several places through the kingdom, and elsewhere, from the beginning to the conclusion of the war, amounts to 1,354,490 persons. Besides these, a vast multitude died in the caves, woods, wildernesses, common sewers, in banishment, and in many other ways, of whom no computation could be made; 10,000 were slain at Jotapa, not admitted into the author's computation. Allowing for the prisoners and others that have been omitted, the whole amount will be above one million four hundred and sixty thousand. Simon and John, the two grand rebels and leaders of the principal factions, were reserved for the triumph of Titus. These two infamous persons appeared at the head of 700 of the most beautiful Jewish captives who adorned this triumph. Simon was dragged through the streets of Rome with a rope about his neck, severely scourged, and put to death with some of his associates; but John was sent into perpetual imprisonment. The last fortress that was attacked and taken was Massada, the besieged, under Eleazar, the grandson of Judas the Gaulonite, having agreed to destroy one another; and thus this dreadful war terminated. Vespasian ordered the Jewish lands to be sold for his own use; and all the Jews within the Roman empire were commanded to pay into his treasury the usual tribute of half a shekel, or two drachmas, which they had formerly been obliged to pay for the use of the sanctuary. He likewise caused all the branches of the house of Judah to be cut off, to deprive them at once of all hopes of a deliverance, or future Messiah. Thus ended the Jewish nation and worship; nor have they been able to regain any settlement in their native country of Judea; but there is scarcely a country on the face of the globe where they are not to be found. They still remain, as a monument of the truth of our religion, a distinct people, unincorporated among the inhabitants of the countries in which they reside. They still profess to pay a regard to the worship and ceremonies enjoined by the law of Moses, to which they have added many rites that are merely of traditional authority. They also entertain the unfounded expectation of a Messiah to deliver them from the low state into which they are sunk. In many countries, and in different ages, they have been most cruelly massacred, and it is lamentable to think that they have been generally more mildly treated by Pagans and Mahometans than by Christians. It would be endless to recite the numerous edicts that have been framed against them, and it would be painful to recount the instances of severe persecution which their history furnishes. And yet, notwithstanding all the contempt and insult, and suffering which they have endured, they still subsist in almost every part of the globe. There are few countries from which they have not been repeatedly banished, though they have availed themselves of the opportunities for returning, which change of circumstances has afforded them; and many of them have acquired both wealth and reputation, notwithstanding the oppression which they have endured. There is hardly any country in Europe in which the Jews have enjoyed greater liberty than in Poland. Here they have had their stately synagogues and academies; and their house of judgment, or court of judicature, was endowed with singular authority, being allowed to judge of criminal as well as civil cases. Poland has been looked upon as a nursery of learned rabbins, and the country to which the Jews have been formerly accustomed to send all their youths to study the Talmud, and the rites of their religion. The city of Hamburgh has been called the "Lesser Jerusalem," on account of the many Jews that live and traffic in it. The Jews have been endowed with great privileges at Prague. In Hungary they had in the 17th century the privilege of farming the revenue; till an edict of Ferdi-

nand II. deprived them of it in 1630. Here they held their grand council, A.D. 1650, in which was debated the grand point, whether the Messiah was come? (See *AGEDA*.) In Holland they are said by one of their writers to have enjoyed greater liberty and quietness, and to have been more flourishing and wealthy than in any other part of the world. We find nothing worth mentioning concerning the Jews in England till the time of king John; except that they were invited into this kingdom by William the Conqueror. Even so early as the reign of king Stephen, A.D. 1145, they were accused of crucifying a young Christian in contempt of Christ and his religion, and were accordingly punished for it; they were again persecuted for the same atrocious fact at Gloucester, in the reign of Henry II., A.D. 1160; and for a third, committed at St. Edmundsbury, A.D. 1181; but these tales were probably false accusations alleged against them as apologies for oppressing and plundering them. The exactions imposed by king John, A.D. 1210, fell with peculiar weight on the Jews, whom he caused to be imprisoned and tortured, because they refused to pay the taxes which he imposed upon them. At length he confiscated all their effects and banished them by a public edict. They were not treated in a much better manner under the long reign of Henry III., when many of them chose to become Christians, in order to avoid the severity of his government; but being afterwards detected, they were punished for their dissimulation. The Jews of Norwich, A.D. 1235, were accused of having stolen a Christian child, and of having kept him a whole year, in order to circumcise and crucify him on the ensuing passover; but the fact being detected, they underwent a due punishment. Some other similar facts have been mentioned, which at this distance of time, and considering the various means that were used for raising money, cannot be duly authenticated. The Holy war, to which Henry was pressingly invited by the pope, A.D. 1252, proved another pretence for squeezing money out of his subjects, and especially from the Jews, whom he made no scruple to strip of all they had left. Another cause of demand was the Spanish war. After their expulsion by king Edward, A.D. 1291, they never more appeared in a body in this kingdom from that time, till they were recalled to it in the time of Oliver Cromwell. Rabbi Menasse, it is said, came over into England A.D. 1656, with a design of procuring a settlement for the Jews, and was well received by Cromwell and the parliament; as was also his apology for the Jews, in which he exploded all the calumnies raised against his nation, especially those of their crucifying and using the blood of Christian children at their passover: he is said to have pleaded his cause so well, as to obtain a better settlement and greater privileges for them than they had before enjoyed in England.

Formerly in this country, as it is said, the life of a Jew was at the disposal of the chief lord where he lived, and also all his goods. So strong were the popular prejudices against them, that in the year 1348 a fatal endemic distemper, which raged in a great part of Europe, was ascribed to their having poisoned the springs and wells; in consequence of which, a million and a half of them were cruelly massacred. In 1492, half a million of them were driven out of Spain, and 150,000 from Portugal. But we rejoice to think that we live in a more enlightened period, when a more liberal system is established. The countries of Europe, we trust, are beginning to perceive the wisdom and benefits of universal toleration. In England the Jews are allowed the free exercise of their religion, liberty of trade, and the quiet enjoyment of their property: though some accession to their freedom is still wanting. (See *Jew's Bill*.) Here,
like

like those of Holland, they are commonly distinguished into German and Portuguese, and have their respective synagogues, chiefs, schools, &c. but no academy; so that they are obliged to send their youth to be educated in Germany, or at Amsterdam. The former are the most indigent, as well as the most zealous for their religion, and most careful to instruct their children in it, and in the knowledge of the Hebrew tongue; whereas the latter, being opulent, are more remiss in these respects; inasmuch that many of them cannot so much as understand the liturgy of their synagogues, but have it translated into Portuguese. However, both of them have had some learned rabbis. The rich among them are very generous and charitable, not only to their own poor, but to those of the Christians. Attempts are now (1811) making for communicating instruction to their poor, and for converting them to Christianity. In France they have lately obtained a very considerable extension and establishment of their privileges; an act of political wisdom which in due time will, without doubt, be imitated by other states; so that Jews will not only be merely tolerated in other countries, which is now the case in several countries of Europe, but obtain a permanent settlement. *Anc. Univ. Hist. vols. ii and iii. Mod. Univ. Hist. vol. xi.*

JEWS, are those who profess obedience to the laws and religion of Moses. See **JUDAISM**.

By *nat. 1 Ann. c. 30.* if Jewish parents refuse to allow their Protestant children a fitting maintenance, suitable to the fortune of the parent, the lord chancellor, on complaint, may make such an order as he shall see proper.

JEZDIKAN, or **JEZDKAN**, in *Geography*, a town of Persia, in Adirbeitzan; 90 miles W. of Tabris.

JEZDKAST, or **YEDKAS**, a town of Persia, in Farfistan; 42 miles S. of Ispahan.

JEZIDES, or **JEZIDEANS**, a term used among the Mahometans, to signify *heretics*.

In which sense *Jezeidians* stands opposed to *Mussulman*. Leunclavius tells us, that the name is derived from an emir, called *Jezeid*, who killed the two sons of Ali, Hasan and Hussein, two grandsons of Mahomet on their mother's side, and persecuted the posterity of the prophet. The Agareniens, whose emir or prince he was, looked on him as an impious and heretical person, and hence took occasion to call all whom they accounted heretics, *Jezeidians*.

Beaufobre conjectures, that the denomination of this sect is derived from the name of Jesus; but it seems rather to be borrowed from the Persian *Jazid* or *Jezeidan*, signifying the good God, in opposition to Arimanius, the evil principle; so that the term points out this sect as the worshippers of the good or true god. After all, this name may have been derived from the city *Jezeid*.

Some authors mention the *Jezeides* as a particular people, speaking a language different both from the Turkish and Persian, though somewhat akin to the last. They farther tell us, that there are two kinds of *Jezeides*; the one *black*, the other *white*. The white have no slit in the bosom of their shirt, but barely an opening for the head to pass through; a thing that they observe with a great deal of strictness, in memory of a circle of gold and light, which they say fell from heaven upon the neck of their grand scheik, or chief of their sect. The black *Jezeides* are faquirs, or religious, and go arrayed in sable garments.

The Turks and *Jezeides* bear a strong aversion to each other, and the greatest affront one can put upon a Turk, is to call him a *Jezeidean*. On the contrary, the *Jezeides* love the Christians; being persuaded that *Jezeid*, their chief, is Jesus Christ; or rather, because some of their traditions

mention, that *Jezeid* made an alliance with the Christians against the *Mussulmen*.

They drink wine, even to excess, when they can get it, and eat swine's flesh. They never undergo circumcision, excepting when they are forced to it by the Turks. Their ignorance is surprising; they have no books. Indeed they pretend to believe in the Gospel, and in the sacred books of the Jews; but they never read either one or other of them. They make vows, and go on pilgrimage; but have no mosques, temples, nor oratories, no feasts, nor ceremonies; all their religious worship consisting in singing hymns to Jesus Christ, the Virgin, Moses, and Mahomet. When they pray, they look towards the east, in imitation of the Christians; whereas the *Mussulmen* turn towards the south. They believe the devil may possibly, one day, come into favour again with God; and that he is the executor of God's justice in the other world: for which reason, they make it a point of prudence not to speak ill of him, lest he should revenge himself of them.

The black *Jezeides* are reputed saints: and it is forbidden to weep at their death; instead whereof they make rejoicings: and yet, for the generality, they are no more than shepherds. They are not allowed to kill the animals they eat; that office belongs to the white *Jezeides*. The *Jezeides* go in companies like the Arabs; and are an unsettled, wandering tribe, who frequent the Gordian mountains, and the deserts of Curdistan, a province of Persia. They often change their habitations, and live in black tents made of goats' hair, and encompassed with large rushes and thorns interwoven. They dispose their tents in a circle, placing their flocks in the middle. The buy their wives; the stated price whereof is two hundred crowns, be they better or worse. They are allowed divorce, provided it be to become faquirs. It is a crime among them to shave their beard, though ever so little. They have some customs which intimate that they sprung originally out of some sect of Christians: for instance, in their feasts one of them presents a cup full of wine to another, bidding him take the cup of the blood of Jesus Christ; which last kisses the hand of him who presents it, and drinks.

JEZIERNICA, in *Geography*, a town of Lithuania, in the palatinate of Novogrodek; 40 miles S.W. of Novogrodek.

JEZIOROCZE, a town of Lithuania, in the palatinate of Wilna; 32 miles W.N.W. of Braflaw.

JEZORA, a town of Lithuania, in the palatinate of Troki; 12 miles N.E. of Grodno.

JEZREEL, in *Scripture Geography*. See **ESDRAELON**.

IF, in *Geography*, a small, fortified, and garrisoned island in the Mediterranean, near the coast of France, at the entrance of the port of Marseilles.

IFFEBAN, a town of Persian Armenia; 138 miles E.N.E. of Erivan.

IFFROS, a town of Arabia, in the province of Yemen; 12 miles E.S.E. of Taas.

IFLAMABAT, a town of Hindooistan, in the country of Bengal; 124 miles S.S.E. of Dacca.

IFRAN, or **UFARAM**, a town and district of Africa, near the Atlantic, belonging to Morocco; 40 miles S.W. of Non.

IFVER KYLEE, a town of Sweden, in the province of Tavastland; 26 miles N.N.E. of Jamsio.

IGA, a sea-port town of Japan, in the island of Nippon, and bay of Owari; 85 miles S.E. of Meaco. N. lat. 35° 10'. E. long. 138°.

IGARIFE, a river of Brazil, which runs into the Paraguary.

IGALSHA, one of the smaller Shetland islands, near the W. coast of Mainland. N. lat. $60^{\circ} 57'$. W. long. $1^{\circ} 48'$.

IGAT, a small island in the East Indian sea. S. lat. $7^{\circ} 11'$. E. long. $130^{\circ} 35'$.

IGEIALIN, a small island in the strait between Russia and America. N. lat. $65^{\circ} 40'$. E. long. $189^{\circ} 36'$.

IGGON, a small island on the W. side of the gulf of Bothnia. N. lat. $60^{\circ} 43'$. E. long. $17^{\circ} 7'$.

IGILGILI, in *Ancient Geography*, a town of the eastern part of Mauritania Cæsariensis, situated near the promontory which forms the bay of Saldæ, to the east. It has been episcopal. See JIJEL.

IGILLIUM, now *Giglio*, an island of Italy, in the vicinity of that of Dianium, towards Etruria. The thick woods of this island served as a place of refuge for a great number of Romans, who fled from the sack of Rome by Alaric.

IGLAU, in *Geography*, a town of Moravia, capital of a circle of the same name, which contains 21 towns, 294 villages, and 6433 houses. The town is well built, fortified, and populous; and contains 196 houses, two convents, and a village. The cloth manufactured in this town is good, and is conveyed to Italy by Trieste. The town has also considerable commerce in corn and hemp; 62 miles S.E. of Prague. N. lat. $49^{\circ} 25'$. E. long. $15^{\circ} 30'$.—Alfo, a river of Moravia, which runs into the Teya near Mufchau.

IGLORSOIT, a town of East Greenland. N. lat. $61^{\circ} 25'$. W. long. $45^{\circ} 10'$.

IGNATEVSKOE, a town of Russia, in the government of Ekaterinoff; 40 miles S. of Bachmut.

IGNATIA, in *Botany*, so named in the *Supplementum* of Linnæus, because the seeds are known in the *Materia Medica* by the name of *Faba Sancti Ignatii*, or St. Ignatius's Beans. Linn. Suppl. 20. Schreb. 135. Willd. Sp. Pl. v. 1. 1053. Mart. Mill. Dict. v. 2. Gärtn. t. 179. Clafs and order, *Pentandria Monogynia*. Nat. Ord. *Apocineæ*, Juss. Brown.

Gen. Ch. Cal. Perianth inferior, of one leaf, short, bell-shaped, with five upright, ovate, blunt teeth. Cor. of one petal, funnel-shaped; tube thread-shaped, a span long, smooth, erect; limb flat, in five deep, oblong, obtuse, entire segments. Stam. Filaments five, inserted into the receptacle, as long as the tube, thread-shaped, very smooth; anthers cohering in the form of an oblong, acute, hispid, five-sided tube. Pist. Germen minute, superior, ovate, smooth; style thread-shaped, the length of the stamens; stigma in two deep awl-shaped divisions. Peric. Berry large, pear-shaped, smooth, of one cell, with a thick woody coat. Seeds numerous, smooth, crowded, hard, oblong, somewhat angular; the plumula stalked.

Eff. Ch. Calyx inferior, five-toothed. Corolla with a very long tube. Berry coated, of one cell, with many seeds.

1. *I. amara*. Linn. Suppl. 149. (*Ignatiana philippina*; Lour. Cochinch. 126.)—Native of the East Indies.—A tree, with long, twining, copious, smooth branches. Leaves opposite, stalked, ovate, entire, a span long, very smooth. Panicles axillary, small. Flowers very long, drooping, white, scented like jasmine. Fruit the size and shape of a middling pear. Seeds scarcely an inch long, very bitter, celebrated as a cure for weakness in the stomach, and for intermitting fevers.

Jussieu refers this plant to the genus *Strychnos*, but Gärtner points out the stalked cotyledons (or plumula), as almost peculiar to it, and not found in that genus.

IGNATIUS, in *Biography*, one of the apostolical

fathers, was bishop of Antioch, in Syria, towards the latter part of the first and the beginning of the second century. According to Eusebius and St. Jerom, he succeeded Euodius in the see of Euodius, having been ordained, says the former, in the year 69, after the death of Peter and Paul at Rome, or, as others say, by Peter; and hence we may conclude, that he was acquainted with several of the apostles. Indeed, St. Chrysostom says, that he conversed familiarly with them, and was perfectly acquainted with their doctrine. This venerable man was condemned, in the persecution of Trajan, to be devoured by wild beasts in the public theatre at Rome, whither he was brought from Syria by the emperor's order for this purpose. The time of his martyrdom has been placed by Eusebius, and after him by Dupin, Tillemont, Cave, and Lardner, in the 10th year of Trajan, A. D. 107; but by Pearson, Loyd, Pagi, Le Clerc, and Fabricius, in 116: the former, however, is thought to be the most probable opinion concerning the time of his death. Eusebius and Jerom mention seven epistles written by this father, and besides these, other epistles have been ascribed to him which are universally supposed by learned men to be spurious. Of the above-mentioned seven, there are two editions; one called the larger, and oftentimes the interpolated; and another, called the smaller. It is now, says Lardner, the general opinion of learned men, that the larger are interpolated, and that the smaller have by far the best title to the name of Ignatius. The larger, says this judicious writer, who compared the two editions, are an interpolation of the smaller, and not the smaller an epitome or abridgment of the larger. But whether the smaller themselves are the genuine writings of Ignatius, bishop of Antioch, is a question that has been much disputed among the ablest critics. Upon duly considering the testimonies alleged from Iræneus, Origen, and Eusebius, and also the internal characters of simplicity and piety, which occur in these epistles, (*viz.* the smaller), Dr. Lardner concludes it to be probable, that they are for the main the genuine epistles of Ignatius. As to the time in which they were written, this is determined by that of his martyrdom. For they were written after he was condemned to the wild beasts, and whilst he was conducted as a prisoner from Antioch to Rome. These epistles are now extant in Greek, and in an ancient Latin version, which latter was published by archbishop Usher in 1664. In 1646, Isaac Vossius published six of the seven epistles in Greek, from a MS. at Florence: the epistle to the Romans, which was wanting, has been since published in Greek by Ruinart, from a MS. at Paris. In Ignatius's epistles there are frequent allusions and references to particular books, or texts, of the New Testament; and it has been observed by some learned men, that this ancient writer has made mention of the scriptures of the New Testament under some general names and divisions. Lardner's Works, vol. ii.

Ignatius is said by Socrates, the ecclesiastical historian, lib. vi. cap. 8. "to have established antiphonal singing at Antioch, from a vision, in which he saw the blessed spirits above singing hymns to the sacred Trinity, alternately; which method of singing," says the same author, "Ignatius taught to the church; and this, together with the account of the miracle which gave rise to it, was communicated to all the churches of the East."

Nicophorus, St. Chrysostom, Anastasius, and many others, acquiesce in this account of the origin of antiphonal singing, as do our countrymen Hooker, Hammond, Beveridge, and Dr. Comber.

IGNATIUS LOYOLA. See JESUITS.

IGNATIUS's Bean, *Faba Sancti Ignatii*, in the *Materia Medica*, the fruit of a plant growing in the East Indies and Philippine islands, described by father Camilli, in the Philosophical Transactions, under the name of Catalongay, and Cantara; and by Plukenet, under that of Cucurbitifera malabathri foliis scandens, cujus nuclei faba sancti Ignatii nuncupati. The Spaniards call it *cathalagon*. It is a dry and hard fruit, or kernel of a fruit, of the size of a large hazel nut; and is much celebrated for its medicinal virtues, being recommended in vertigoes, lethargies, epilepsies, asthma, quartan agues, and worms. It is also given against distemperatures of the stomach, and as an alexipharmic. The dose in substance, as an emetic, is ten or twelve grains; and in smaller doses it sometimes promotes a plentiful sweat: Neumann says that he has known intermitting fevers cured, by drinking, on the approach of a paroxysm, an infusion of some grains of the seed in carduus water; and Dr. Lewis has been informed, that two grains were found to have as much effect as a full dose of bark. But it seems too hazardous for general use. See *NUX Vomica*, *STRYCHINOS*, and *IGNATIA*.

IGNAVUS, in *Natural History*, a name given to the animal called in English the sloth. See *BRADYPUS* and *SLOTH*.

IGNIARIUS LAPIS, a name given by some to the pyrites, or fire-stone, from its yielding a great quantity of sparks when struck against steel.

IGNICOLÆ, *Worshippers of Fire*. See *GABRES*.

IGNIS AQUA, *Fire-Water*, a name by which Helmont, in some of his writings, calls the alkalest, or universal dissolvent, so much talked of by him and Paracelsus.

IGNIS Fatuus, a common meteor, chiefly seen in dark nights frequenting meadows, marshes, and other moist places, and often seen in burying-grounds, and near dunghills. It is known among the people by the appellations *Will with a Wisp*, and *Jack with a Lanthorn*.

Sir Isaac Newton calls it a vapour shining without heat; and it has been supposed to be of the same nature with the light issuing from putrescent substances. Willughby and Ray were of opinion that it is occasioned by shining insects: but all the appearances of it observed by Dr. Derham, Beccaria, and others, sufficiently evince, that it must be an ignited vapour. The form and size of the ignes fatui are very various and often variable. The late experiments on air serve to furnish a rational explication of this phenomenon, to which the ignorant and superstitious have ascribed so many alarming purposes. Inflammable air has been found to be the most common of all the factitious airs in nature; and to be the usual product of the putrefaction and decomposition of vegetable substances in water: and signior Volta, in a letter to Dr. Priestley, informs him that he fires inflammable air by the electric spark, even when the electricity is very moderate: and he supposes, that this experiment explains the inflammation of the ignes fatui, provided they consist of inflammable air issuing from marshy ground by the help of the electricity of fogs, and by falling stars, which are very probably thought to have an electrical origin. (Priestley's *Obs.* on Air, vol. iii. Appendix, p. 382.) The reader will find a particular account of various particulars relating to the ignis fatuus, in the *Phil. Trans.* Abr. vol. vii. p. 147, &c.

Dr. Shaw describes an ignis fatuus, which he saw in the Holy Land, that was sometimes globular, or in the form of the flame of a candle; and immediately afterwards spread itself so much as to involve the whole company in a pale inoffensive light, and then contract itself again, and suddenly disappear. But in less than a minute it would become visible as before; or, running along from one place to another,

with a swift progressive motion, would expand itself, at certain intervals, over more than two or three acres of the adjacent mountains. The atmosphere at this time had been thick and hazy, and the dew on their bridles was unusually clammy and unctuous.

In the same weather, he observed those luminous appearances, which, at sea, skip about the masts and yards of ships, and which the sailors call *corpufansé* by a corruption of the Spanish *cuerpo santo*. Shaw's *Travels*, p. 393.

IGNIS Gehennæ, in *Chemistry*, a name given by Paracelsus to a certain menstruum, capable of dissolving all bodies, and remaining itself unaltered by them.

Van Helmont seems to make this the same with the alkalest, so celebrated in his writings, and so ardently sought after by all the chemists since his time.

IGNIS Judicii. See **JUDICIUM Dei**, and **ORDEAL**.

IGNIS Sacer, literally *holy fire*, in *Medicine*, an appellation which has been given, from ancient times, to various diseases, of which external redness and heat, followed by ulceration or gangrene, seem to have been the principal characteristics.

Other appellations have been used as nearly synonymous with this; such as *ignis Sancti Antonii*, *feu St. Antoine*, or *St. Anthony's fire*, *morbus ardentium*, or *mal des ardens*, &c. By different writers, however, these terms have been applied to diseases of considerable difference of character, by which much confusion has been produced. We have already stated that the word *sacer*, or *sacred*, was employed to denote any thing *great*; and was used as an epithet to diseases of uncommon severity and duration, which, as Aretæus observes, seem to require more than human power to cure them (see **EPILEPSY**), and were often considered as inflictions of the divine vengeance. The name of St. Anthony seems to have been first associated with an epidemic and fatal disease, which prevailed in many parts of France, and especially in Dauphiné, about the end of the 12th century, when the religious houses of the order of St. Anthony were used as hospitals for those who were attacked with the disease. (Mezeray, *Abrégé Chronologique*.) It was the popular opinion in France, in the 12th and 13th centuries, that all the patients, who were conveyed to the abbey of St. Anthony, which had been recently founded at Vienne, in the province just mentioned, where the bones of this saint had been deposited, were cured in the space of seven or nine days. It is stated (in the "*Histoire des Ordres Monastiques*," tom. i. p. 337.) that in 1702, there were still some black and withered limbs which had been preserved in that abbey from the period alluded to. Similar maladies were epidemic both at an earlier and later period: and it appears from a memoir by M. Le Comté, physician to the abbey at Vienne, that the same disease prevailed in Dauphiné in 1709. This physician affirms that the disease might be cured by judicious medical treatment; but that the most certain relief was obtained by addressing a vow to St. Anthony. See a full and able history of the subject in the "*Memoires de la Société Royale de Médecine de Paris*," tom. i. p. 260. by M. M. de Jussieu, Paulet, Saillant, and the abbé Tessier, who were nominated by the society to investigate it.

From this circumstance, it would appear that the *erysipelas*, which consists of an inflammation of the skin, accompanied by the rising of large blisters, analogous to those produced by the action of fire, whether in burning or scalding, has obtained in this country the appellation of *St. Anthony's Fire*. It is not, however, the disease above alluded to as formerly epidemic in France.

The Latins understood by the term *ignis sacer* the erysipelas of the Greeks, as well as the *zona*, or *Herpes zoster*,

which we call *sbingles*. See Celsus, De Med. lib. v. cap. 28, who places the disease among the *mala ulcera*, and mentions two species, one of which is apparently the *zoster*.—Alfo, Marcellus, de Medicamentis, cap. xx.—Plin. Nat. Hist. lib. xxvi. cap. 2. See HERPES.

It would appear, that the confusion among modern writers above mentioned, has arisen from the application of the terms *ignis sacer*, feu sacré, feu St. Antoine, and mal des ardens, to three varieties of disease, essentially distinct from each other, exclusive of the erysipelas: these are the common plague, the dry gangrene, or *ergot*, and the *raphania*. The two first, it appears, were prevalent about the same periods, in the tenth, eleventh, and twelfth centuries, affecting chiefly the lower classes of the people; whence historians have confounded the symptoms of the two maladies. But from the investigation of M. M. Jussieu, &c. it is obvious that the disease, more particularly designated by the title of “mal des ardens,” was an acute pestilential fever, attended with extreme heat, and with buboes in the groin, *i. e.* the *pestis inguinaris*, or *inguinalis*, or, in the words of Mezeray, *peste qui prenoit en l’aîne*; which was also “the plague” described by Ambrose Paré, Boccacio, Guy de Chauliac, Vinarius, &c. in the 14th century. This was likewise the opinion of Astruc. But the second, *ignis sacer*, or feu St. Antoine, was, in fact, a chronic disease, of considerable duration, accompanied by severe pain, and terminating in a shrivelling and drying of one or more of the limbs, which became black, and ultimately dropped off, if the life of the patient survived.

In the *mal des ardens*, or plague, no drying or dropping off of the limbs occurred; and in the *feu sacré* no inguinal buboes, or acute fever. In short, the latter was obviously the disease which was subsequently denominated *ergot*, and has been attributed, by the majority of writers on the subject, to the use of rye as aliment, which was affected with the disease so named, to which that grain is liable. (See ERGOT in *Agriculture and Medicine*.) Notwithstanding what has been maintained by the majority of authors, as stated in the article just referred to, it seems probable that this disease, which has been also called the *dry gangrene*, originated rather from a state of starvation, or imperfect nutriment, than from the *ergoted* rye in particular. “For it occurred only after unfavourable seasons, when dearth prevailed, and was augmented by wars; and it afflicted almost exclusively the labouring people, the peasantry, and mendicants; who,” as M. Gaffoud observes, “in order to avoid actual famine, were compelled to live upon a sort of bread made of the meal of acorns, of grape-stones, of the roots of fern, and other such crude and unnutritious substances.” Camerarius positively asserts, that this gangrene was observed in the extremities of persons who had certainly not eaten any *ergoted* rye. (See Acad. Natur. Curios. Cent. iv. Obs. 82.) It was probably to these dry and contracted limbs that the term *scletyrbe* was applied by Pliny and Galen, as well as to those which occur in the last stages of scurvy, rather than to the spasmodic contractions in St. Vitus’s dance, or *Chorea Sti. Viti*, to which they have since been applied. (See CHOREA.) These contractions occurred among the Roman soldiers in Germany, and were attributed to the use of water from a particular spring (see Pliny Nat. Hist. lib. xxv. c. 3.); but more probably originated from imperfect nutriment.

A third disease, which has been several times epidemic in Germany and Sweden, and seems to differ materially both from the common plague and from the dry gangrene, has been attributed by some to the *ergot* of rye, and confounded, under the title of *ignis sacer*, and *ergot*, with the dry gangrene. This is a febrile disease, which is said to begin with an intense heat, accompanied with a sense of *formication*,

or of the creeping of insects over the skin, which is followed by acute pains in the limbs, and convulsive contractions of the muscles. This disease is said to attack in successive paroxysms, after several of which it terminates by a violent sweating, or diarrhoea. If it continued long, it degenerated into epilepsy or palsy. The sweating sickness of England, and the morbus Hungaricus, seem to have partaken of the nature of this fever; and to have originated, like it, in the use of corrupted and imperfect aliment, when every unfavourable season produced a famine. Many writers, however, were persuaded that it originated from the *ergot* of rye; while others attributed it to the *honey-dew* and *blight*, *ustilago*, with which the corn and herbs were affected. The malady was epidemic in Sweden in 1746 and 1754, when it was observed that the *raphanus raphanistrum* grew in great abundance among barley; and Linnæus, suspecting this to be the cause of the disease, fed some fowls with the seeds, which were said to become convulsed; whence he gave the name of *Raphania* to the disease, which was adopted by Dr. Cullen. (Lin. Amœnit. Acad. vol. v. Cullen Nosol. Method. Gen. li.) It was called *Morbus convulsivus epidemicus* by the Marburg professors, and from the sense of formication, was popularly termed, in Germany, *die kriebel krankheit*. (See Gregor. Horst. Opera, tom. ii. lib. viii. Obs. 22. Cullen Nosol. with the numerous references there given; and particularly the paper of M. Saillant, in the Mem. de la Soc. Roy. de Med. tom. i. p. 303; likewise the genera of Eclampsia, sp. 1. *typhodes*, and Convulsio, sp. 8. *ab ustilagine*, in the Nosology of Sauvages.) It may, perhaps, be again questioned, however, whether, in these experiments of Linnæus, and in those of the abbé Tessier before mentioned (see ERGOT), the animals fed with the seeds of the raphanistrum and *ergot*-ed rye were not rather starved, for want of nutritious food, than poisoned by that which was deleterious. Is it probable that the rye, through extensive provinces, should be all affected with the *ergot*, so as to produce a general epidemic? Is not the disappearance of the disease in our own times rather to be attributed to the general improvements in agriculture, which have rendered dearth less frequent and extensive, and to the increase of commerce, which has facilitated the supplies of nutritious food, to make up for these partial deficiencies, than to the disappearance of the disease of corn? See RAPHANIA.

IGNIS, *St. Antonii*. See ERYSIPELAS.

IGNISPICIUM, among the *Romans*, a species of divination taken from the fire used in sacrifices. See PYROMANCY.

IGNITION, in *Chemistry*, the application of fire to metals, till such time as they become red-hot without melting. This happens in gold and silver; but especially in iron; but lead and tin are too soft and fusible to bear ignition.

IGNORAMUS, q. d. *We do not know*; in *Law*, a word used by the grand jury, impannelled on the inquisition of causes criminal, and formerly written upon the bill, when they dislike their evidence, as defective, or too weak to make good the presentment. But now they assert in English, more absolutely, “not a true bill,” or, which is the better way, “not found.”

The effect of which is, that all farther inquiry upon that party for that fault is thereby stopped, and he is delivered without farther answer. See BILLA VERA.

IGNORANCE, the privation, or want of knowledge.

Ignorance, according to Mr. Locke, is chiefly owing to three causes: want of ideas; want of a discoverable connection between the ideas we have; and want of tracing and examining our ideas. See IDEA.

There are some things we are ignorant of for want of ideas: all the simple ideas we have are confined to the observation of our senses, and the operations of our own minds, which we are conscious of in ourselves. What other ideas it is possible other creatures may have, by the assistance of other senses or faculties, more or perfecter than we have, or different from our's, is not for us to determine; but to say there are no such, because we conceive nothing of them, is no better an argument, than if a blind man should be positive there was no such thing as light and colours, because he had no manner of idea of any such thing.—What faculties, therefore, other species of creatures have, to penetrate into the nature and inmost constitutions of things, we know not; this we know, and certainly find, that we want other views of them, besides those we have, to make discoveries of them more perfect. The intellectual and sensible worlds are in this perfectly alike; that the parts which we see of either of them, hold no proportion with that we see not; and whatsoever we can reach with our eyes, or our thoughts, of either of them, is but a point, almost nothing, in comparison of the rest. Again, the want of ideas, which we yet seem capable of, is another great obstacle in our way, and keeps us in ignorance of things, which we conceive capable of being known. Bulk, figure, and motion, we have ideas of; yet, not knowing what is the particular bulk, motion, and figure, of the greatest part of the bodies of the universe, we are ignorant of the several powers, efficacies, and ways of operation, whereby the effects we daily see are produced. These are hid from us in some things, by being too remote; and in others by being too minute.

This, at first sight, shews us how disproportionate our knowledge is to the whole extent even of material beings: to which if we add the consideration of that infinite number of spirits that may be, and probably are, which are yet more remote from our knowledge, and whereof we have no cognizance at all; we shall find this cause of ignorance conceals from us, in an impenetrable obscurity, almost the whole intellectual world; a greater, certainly a more beautiful world than the material: for, abating some very few ideas of spirits, which we get from our own mind by reflection, and from thence the best we can collect of the Father of all spirits, the author of them, and us, and all things, we have no certain information so much as of the existence of other spirits, but by revelation: much less have we distinct ideas of their different natures, states, powers, and several constitutions, wherein they agree or differ one from another, and from us: and therefore, in what concerns their different species and properties, we are under an absolute ignorance.

Another cause of ignorance is, the want of discoverable connexion between those ideas we have: where we want that, we are utterly incapable of universal and certain knowledge; and are, as in the former case, left only to observation and experiment. Thus the mechanical affections of bodies having no affinity at all with the ideas they produce in us, we can have no distinct knowledge of such operations beyond our experience; and can reason no otherwise about them, than as the effects or appointments of an infinitely wise agent, which perfectly surpasses our comprehension. The operation of our minds upon our bodies is as inconceivable: how any thought should produce a motion in body, is as remote from the nature of our ideas, as how any body should produce any thought in the mind. That it is so, if experience did not convince us, the consideration of the things themselves would never be able, in the least, to discover to us. In some of our ideas there are certain relations, habitudes, and connections, so visibly included in

the nature of the ideas themselves, that we cannot conceive them separable from them by any power whatsoever: in these only we are capable of certain and universal knowledge. Thus the idea of a right-lined triangle necessarily carries with it an equality of its angles to two right ones; but the coherence and continuity of the parts of matter, the production of sensation in us, of colours and sounds, &c. by impulse and motion, being such wherein we can discover no natural connection with any ideas we have, we cannot but ascribe them to the arbitrary will and good pleasure of the wise architect. The things that we observe constantly to proceed regularly, we may conclude, do act by a law set them; though by a law we know not, whereby those causes work steadily, and effects constantly flow from them, yet their connections and dependencies being not discoverable in our ideas, we can have but an experimental knowledge of them. Several effects come every day within the notice of our senses, of which we have so far sensitive knowledge; but the causes, manner, and certainty of their production, we must, for the foregoing reasons, be content to be ignorant of. In these we can go no farther than particular experience informs us of matter of fact; and, by analogy, we guess what effects the like bodies are, upon other trials, likely to produce. But as to perfect science and natural bodies (not to mention spiritual beings), we are so far from being capable of any such thing, that it may be reckoned lost labour to seek after it.

The third cause of ignorance is, our want of tracing those ideas we have, or may have; and finding out those intermediate ideas, which may shew us what habitude of agreement or disagreement they may have one with another: and thus many are ignorant of mathematical truths for want of application in inquiring, examining, and by due ways comparing, those ideas.

IGNORANCE, in *Law*, is a want of knowledge of the laws; which will not excuse a person from suffering the penalty annexed to the breach of them; because every one is obliged, at his peril, to know the laws of the land. "Ignorantia juris, quod quisque tenetur scire, neminem excusat," is as well the maxim of our own law, as it was of the Roman. (Plowd. 343. Ff. 22. 6. 9.) The ignorance or mistake which constitutes a defect of will is, when a man, intending to do a lawful act, does that which is unlawful. For here the deed and the will acting separately, there is not that conjunction between them which is necessary to form a criminal act. But this must be an ignorance or mistake of fact, and not an error in point of law. Or if a man, intending to kill a thief or housebreaker in his own house, by mistake kills one of his own family, this is no criminal action (Cro. Car. 538.); but if a man thinks he has a right to kill a person excommunicated, or outlawed, wherever he meets him, and does so; this is wilful murder according to the principle above stated.

IGNOROMOUS, in *Geology*, is a term used by Mr. Kirwan (*Geolog. Essays*, p. 161. 274, &c.) to denote the substances thrown out of volcanos; and in which also he includes the materials of pseudo-volcanic tracts, or those which have been exposed to accidental fires, like the burning of a seam of coals, &c.

IGRANI, in *Geography*, a town of European Turkey, in Dalmatia; 44 miles E.S.E. of Mostar.

IGRIDI, a town of Asiatic Turkey, in Caramania, situated on a large lake.

IGUALADA, a town of Spain, in Catalonia; 18 miles S.E. of Cervera.

IGUANA, in *Zoology*, the name of a species of lizard, very frequent in the West Indies. It is an amphibious animal,

mal, of the lizard shape, and in colour partly brown and partly grey, in some of the animals; and in others of a beautiful green, variegated with black and white spots. From its neck to the extremity of its tail, it has a continued series of flat-pointed and serrated scales, of a fine green colour. These are largest at the neck. See LACERTA.

IGUAPE, in *Geography*, a river of Brazil, which runs into the Atlantic, S. lat. $3^{\circ} 35'$. W. long. $38^{\circ} 56'$.

IGUAY, a river of South America, which rises in Paraguay, and crossing Brazil, runs into the Atlantic, forming a large estuary at its mouth, where it is called "Rio Grande." S. lat. $31^{\circ} 54'$.

IGUEN, a river of Brazil, which runs into the Atlantic, S. lat. $10^{\circ} 20'$.

IGUIDI, a town and district of Africa, in the country of Sahara; the country is also called "Lempta."

IGUINAS, a small island in the bay of Panama. N. lat. $7^{\circ} 40'$. W. long. $81^{\circ} 8'$.

IGUIRA, a town of Africa, on the Gold Coast, in the country of Soko, near which is dug very fine gold.

IGUITPO, a town of Brazil, in the government of St. Paul.

IGUNSKOI, a town of Russia, near the eastern extremity of the continent of Asia. N. lat. $65^{\circ} 45'$. E. long. $188^{\circ} 34'$.

IGUVIUM, now *Gavio*, in *Ancient Geography*, a town of Italy, in Umbria, situated towards the S.W. among the mountains. It was municipal, and at some distance from it was a temple of the Apennine Jupiter.

JHANSU-JEUNG, in *Geography*, a town, castle, and valley of Thibet. The town, if it may be so called, consists of a monastery, situated on the concave side of a steep rock, and of about 150 houses, which rise in rows, one behind the other. They are square, pretty regular in their form, and the whitened walls have a band about their tops, two or three feet broad, of a deep garnet colour, which, with the addition of temples, gilded ornaments, and the decorated dwellings of their superior priests, make a very handsome and brilliant spectacle. The whole building was surrounded by high walls, which were continued along the ridge of the rock, and crossed by many intermediate gateways or lodgements, so as to command the monastery, which fronted towards the castle, as well as to overlook the other side of the rock, which is extremely rugged, and almost perpendicular. The vicinity abounds with beggars of all ages and of both sexes. The castle stands upon a rock, which, from its perpendicular height, and the irregularity of its cliffs, if not impregnable, must at least be extremely difficult to be subdued by the assaults of any Tartar enemy. The valley of Jhanfu, which is very extensive, has greatly the appearance of having been once the bed of a lake. It is particularly famous for the manufacture of woollen cloth, for which there is a very great demand. These cloths, which are confined to two colours, garnet and white, seldom exceed half a yard in breadth; they are woven very thick and close, like our frieze; they are very soft to the touch, for the fleece of their sheep appears to be remarkably fine, and supplies an excellent material. Its superior pliability and warmth induce almost all the priests, both here and in Bootan, to use it for the short vest which they wear next the skin; and those who can afford it have also their winter mantle of the same. For this manufacture, the valley of Jhanfu, from its central position, is very conveniently situated, both as to receiving the material and conveying the cloth, when manufactured, to Teshoo Loombo, Lassa, and Bootan. It has, in consequence, become the principal settlement of manufacturers; and it certainly possesses every natural and essen-

tial advantage of space, climate, and fertility. It is extremely rich with abundant crops of corn, and exceedingly populous; 130 miles W.S.W. of Lassa. N. lat. $28^{\circ} 49'$. E. long. $89^{\circ} 32'$. Turner's Thibet, p. 227.

IHLE, a river of Brandenburg, which, by the addition of an artificial canal, forms a communication between the Havel, 9 miles W. of Brandenburg, and the Elbe.

IHNE, a river, which rises from a lake in the New Mark of Brandenburg, passes by Stargard, Golnow, &c. and runs into the Danmisch see or Oder, 9 miles below Damme.

JHONSEN, ROBERT, in *Biography*, an ecclesiastic, and a learned musician, was one of the first of our church composers who disposed his several parts with intelligence and design. In writing upon a plain-song moving in slow notes of equal value, which was so much practised in these times, he discovers considerable art and ingenuity in the manner of treating subjects of fugue and imitation; in which kind of writing he seems to have been much superior to Taverner.

IHRE, JOHN, public professor of rhetoric and politics in the university of Upsal, was born in March 1707. He was, on account of the early death of his father, chiefly educated under his grandfather, then archbishop of Upsal. In 1730, when he had completed his studies, he set out on his travels to enlarge his literary acquirements, and improve himself by the company and conversation of learned men. In 1733 he returned to Upsal, where he disputed "De Usu Accentuum Hebræorum," and was elected a member of the Academy of Sciences. In 1737 he was made public professor of poetry, and in 1748 he was appointed by the king professor of rhetoric and politics; an office, the duties of which he discharged for 40 years with great reputation, and with much real benefit to his pupils. In the year 1756 king Adolphus Frederick raised him to the rank of a counsellor of the chancery; two years after to that of patrician; and in 1759 conferred on him the order of the Polar Star. He died in 1780 in the 74th year of his age. He was author of many works, which will be lasting monuments of his great learning and indefatigable industry. In the year 1756 he undertook a Sueco-Gothic Lexicon, and began to arrange the materials which he had been preparing for the purpose. In 1766 he published a "Lexicon Dialectorum," in which he explained and illustrated obsolete words, still used in the provinces; and in 1769 his "Glossarium Sueco-Gothicum" was published in two volumes folio. Sweden is indebted to him for many other works, particularly for an explanation of the old catalogue of the Sueco-Gothic kings, to which are added the Old West-Gothic Laws. In his dissertations "De Runorum Antiquitate, Patria, Origine, et Occasu" he asserts that the Runic writing was formerly used in the greater part of Europe, was introduced into Sweden about the sixth century, and became entirely extinct in the beginning of the 15th. He was possessed of a sound judgment and a retentive memory; and so clearly were his ideas arranged, that he had never any need to correct what he had composed. He was of a mild disposition, loved innocent mirth, had an open friendly heart, and entertained the utmost reverence for the Supreme Being.

JHYLUM, in *Geography*, a town of Hindoostan, in Lahore; 73 miles N.N.W. of Lahore.

JHYLUM River. See BEHUT.

JIB, in a *Ship*, is the fore-most sail of it, being a large stay-sail extended from the outer end of the bowsprit, prolonged by the jib-boom, towards the fore-top-mast head.

JIB-Boom is a boom run out from the extremity of the bowsprit, parallel to its length, and serving to extend the

bottom of the jib, and the stay of the fore-top-gallant-mast. It is attached to the bowsprit by means of two large boom-irons, or by one boom-iron, a cap on the outer end of the bowsprit; or by the cap without, and a strong lashing within.

JIBBEL-AURESS, in *Geography*. See **AURESS**.

JIBBEL-Deera, a mountain of Algiers, in the province of Titterie; 50 miles S.S.E. of Algiers.

JIBBEL-Karkar, a range of rocky mountains in the western province of Algiers; 20 miles N.E. of Tremecen.

JIBBEL-Dwee, a mountain of Africa, in the western province of Algiers; S. of El Khadarah.

JIBBEL-Ikell, a mountain of Africa, in the northern part of Tunis, anciently mount Cerna; about 15 miles S.W. of Bizerta.

JIBBEL-Mustewab, a mountain of Algiers, in the province of Constantina, the chief abode of a clan of Kabyles, called Welled-Abdenore; 45 miles S. of Constantina.

JIBBEL-Seilat, a mountain of Africa, in the Sahara; 78 miles S.S.E. of Algiers.

JIB-BELEAH, a range of mountains of Africa, forming a boundary between Tunis and Tripoli.

JIBING. See **GYBING**.

JIDDA, in *Geography*, a sea-port town of Arabia Felix, in the sherriffate of Mecca, situated on the Red sea, and first surrounded with walls by Sultan El Guri in 1514, in order to protect it from the Portuguese, who were then beginning to become formidable on the Red sea. Although the walls are still standing, and also the bridges, they are now in a ruinous state. The palace of the Pacha is but an indifferent building; but there are other fine buildings in the town, constructed of coral stone. The other houses are slight wooden fabrics. As Jidda is entirely destitute of water, the inhabitants are supplied with that which is collected by the Arabs in reservoirs among the hills, and brought by them from thence upon camels. The dress of persons of distinction resembles that of the Turks in Cairo; but the poorer sort wear only a shirt without breeches. The dress of the women is that of the Arabian females in general; large drawers, a flowing shirt, and a veil. The employment of many of the poorer sort is fishing, from which they earn but a scanty subsistence. The country round Jidda is sandy and barren; and the sea seems to have receded from the land here as well as in other places, as, at a certain distance from the shore there are hills composed of coral-rock, resembling the banks of coral lying along the coast. The Arabs have a singular method of taking wild ducks in the harbour; the person who is in search of the game stripping himself, and covering his head with sea-weeds, and thus approaching the ducks, which, unalarmed at the sight of the weeds, he seizes by the feet. As Jidda is part of the dominions of the sherriffe of Mecca, the Turkish sultan sends a Pacha to this city; but the supreme authority is shared between the sherriffe and the Turkish governor, who is annually changed. The revenue arising from the customs is divided between the sultan and the sherriffe. The dues of custom are fixed at 10 per cent. upon the value of the goods, arbitrarily estimated, so that they may be really considered as equal to 12 or 15 per cent. The English, however, are particularly favoured, even more than the subjects of the sultan; they pay only eight per cent. and are suffered to discharge this in goods, whereas all others must produce money. Although the trade of Jidda is considerable, this city is no more than a mart between Egypt and India. The ships from Suez seldom proceed farther than this port; and those from India are not suffered to advance to Suez. The circumjacent country affords nothing but Taif almonds

for objects of traffic; and of these the English carry 500,000 weight annually to India. Balm of Mecca is also brought hither from the neighbourhood of Medina, as an article for exportation. The imports are greater, because both Mecca and Medina are to be supplied from this market. Large quantities of corn, rice, lentiles, fugar, oil, &c. are imported from Egypt, without which this part of Arabia could not possibly be inhabited. All goods from Europe come also by way of Egypt; and, on the other hand, those which are brought hither from India, pass generally into Egypt. No money is coined in this province; the specie current here is altogether foreign, and the same as at Constantinople and Cairo. But the larger coins pass at a higher rate here than at Cairo, because small money, brought by the pilgrims, is more plentiful here than even where it is coined. The trading janizaries in this place are properly merchants, who are protected by the privileges of that body in which they are enrolled from the impositions to which this traffic would otherwise be liable; but they perform no military duty, and receive no pay. N. lat. 21° 17'. Niebuhr. Bruce.

JIDGER, a river of Hindoostan, probably the same with the Selima, which runs on the west of Sirhind to the south, towards Soonam, about 60 miles S.W. of Sirhind; between which and the Setlege a canal was formed by Ferose.

JIDMEELAH, a town of Algiers; 28 miles W.S.W. of Constantina.

JIDDOON, a district of Asia, situated on the E. side of the river Sindé, on the borders of Cachemire and Thibet.

JIG, in *Music*, implies both a dance and a tune, generally in rapid triplets of $\frac{3}{8}$, $\frac{3}{4}$, or $\frac{1}{8}$. See **GIGA**.

JIGAT, or **JUGGAT Point**, in *Geography*, a cape of Hindoostan, forming the western extremity and fifth division of Guzerat, on which point is a pagoda. N. lat. 22° 23'. E. long. 68° 12'.

JIGGER, in *Sea Language*, is a machine consisting of a piece of rope about five feet long, with a block at one end, and a sheave at the other; and used to hold on the cable, when it is heaved into the ship by the revolution of the windlasses. See **HOLDING ON**.

JIGGER-tackle, is a light small tackle, consisting of a double and single block, used on various occasions by seamen.

JIGGUROON, in *Geography*, a town of Hindoostan, in the circar of Sirhind; 23 miles W.S.W. of Sirhind.

JIGNI, a town of Hindoostan, in the circar of Gohud; 18 miles S.S.E. of Kooch.

JIG-PIN, in *Mining*, is a pin of wood, which the drawers of ore or coals, &c. by itowfes or turn-beams, put into a hole, to prevent the handles turning round, when it is wished to suspend the barrel or corve in or over the shaft.

JIHON, in *Geography*. See **AMU** and **OXUS**.

JIJEL, a town of Algiers, in the province of Constantina, now reduced to a few houses and a small fort, in which the Turks have a small garrison: it is situated on a point of land near the sea; 30 miles E.N.E. of Boujeiah. This was formerly called *Igilgili*, which see. N. lat. 36° 56'. E. long. 6°.

JILGOUN, a town of Asiatic Turkey, in the province of Caramania; 28 miles E. of Akserai.

JILLIFREE, a town of Africa, in the kingdom of Barra, on the banks of the Gambia. N. lat. 13° 16'. W. long. 16° 7'.

JIMMALI, a town of Abyssinia; 40 miles S. of Miné.

JIMMEL,

JIMMEL, a town of Africa, in the kingdom of Tunis, anciently called "Tegæa;" 11 miles S.W. of Lempta.—Alfo, a town of Algiers, 33 miles S.W. of Conftantina.

JIMMELAH, a town of Africa, anciently "Gemella," near which are magnificent ruins, the remains of an amphitheatre, &c.; 27 miles S.S.W. of Conftantina.

JINBALA, or **GUINBALA**, a kingdom of Africa, being an ifland formed by two branches of the Niger, which feperate at leaving the lake Dibble, and again unite about 15 miles from Tombuctoo. It is of an oval form, about 80 miles long, and about 40 in its greateft breadth. The country is laid to be fertile, and abounding fo much with fwamps and creeks, that the Moors have not been able to fubdue it. The inhabitants are negroes. Its capital is Jinbala, fituated on one branch of the Niger, and ferving as a refing place for merchants, who trade between Tombuctoo and the western parts of Africa. N. lat. $16^{\circ} 4'$. E. long. $0^{\circ} 16'$.

JINCUGHI, a town of Afatic Turkey, in Natolia; 18 miles N. of Kiutaja.

JINDEYA, a town of Africa, in the country of Woolly; 30 miles W.S.W. of Medina.

JINGLER, a town of Hindooftan, in Oude; 33 miles S.E. of Gooracpour.

JINNETT, a fea-port town of Algiers, in the province of Titterie, fituated on a fmall creek of the Mediterranean, at the mouth of the Yiffer. Great quantities of corn are annually exported from this part to Europe; 33 miles E. of Algiers. N. lat. $36^{\circ} 43'$. E. long. $4^{\circ} 10'$.

JINZO, a town of Spain, in Galicia; 12 miles S.E. of Orenfe.

JINZOOWARAH, a town of Hindooftan, in the country of Guzerat; 40 miles S. of Jaagur.

IJO, a town of Sweden, in the government of Ulea; 20 miles N. of Ulea.—Alfo, a town of Japan, in the ifland of Xicoco. N. lat. 34° . E. long. $134^{\circ} 10'$.

JIONPOUR, a circar of Hindooftan, in Allahabad, about 50 miles long and 30 broad.—Alfo, the capital, which is a fmall city on the Goomty river; about 40 miles N.W. of Benares, and on the road from that city to Fyzabad. N. lat. $25^{\circ} 46'$. E. long. $82^{\circ} 55'$.

JIOSORRA, a town of Africa, in Bambarra. N. lat. $14^{\circ} 38'$. E. long. $3^{\circ} 40'$.

JIRBAN, a town of Arabia, in Yemen; 8 miles N.W. of Sana.

JIRREE, a town of Hindooftan, in the circar of Gohud; 25 miles W. of Narwa.

JIRWARY, a town of Hindooftan, in the circar of Gohud; 7 miles S.W. of Gwalior.

JITTIS, a town of Sweden, in the province of Tavastland; 62 miles E. of Tavasthus.

JIVANI, a name of the Hindoo regent, or god of fire, correponding in many points with the Vulcan of western mythologifts. Another of his names is *Pavaka*, which fee.

JIYA, in *Zoology*, the name of an American animal, of the otter-kind, called alfo *carigucibeiu*. It is an amphibious creature, of the fize of a middle-fized dog. Its head is round, and like a cat's; but its nofe is fomewhat pointed; its eyes are black; its ears roundifh, and placed very low as in the otter; and it has a fort of beard or whifkers, compofed of a few ftiff hairs; the feet have all five toes, the inner one being fmall than any of the others: the hair is foft, not long, and all black, except thofe on the head, which are brown, and fome which compofe a yellowifh fpot under the throat. Its note is much like that of a young puppy. It feeds on fifh, and other animals. Ray.

IK, in *Geography*, a river of Ruffia, which runs into the

Kama.—Alfo, a river of Ruffia, which runs into the Sak-kara.

IKALIS, a town of Sweden, in the government of Abo; 40 miles E.N.E. of Biorneborg.

IKARUNGA, a town of Japan, in the ifland of Niphon; 75 miles N. of Meaco. N. lat. $36^{\circ} 16'$. E. long. 136° .

IKDER, a town of Afatic Turkey, in Natolia; 30 miles S. of Satalia.

IKEIKANI, a town of Afatic Turkey, in Natolia; 65 miles E. of Conftantinople.

IKENDA, a town of Japan, in the ifland of Niphon; 140 miles W.N.W. of Jedo.

IKENILD STREET, one of the four famous ways that the Romans made in England. See **WATLING-STREET**.

IKLERA, in *Geography*, a town of Hindooftan, in Katchwara; 34 miles E.N.E. of Saurungpour.

IKOLLA, a province of Africa, in the kingdom of Angola, E. of Loanda.

IKON, a town of Africa, on the Gold coaft, where the Dutch have a factory.

IKTIMAN, a town of European Turkey, in Bulgaria; 25 miles E.S.E. of Sofia.

IKUA, a town of Japan, in the ifland of Ximo; 50 miles N.N.E. of Nangafaki.

ILA, **LAY**, *Isla*, or *Iflay*, is one of the Hebrides, lying to the fouth-weft of Jura, and in the county of Argyll, Scotland. It extends twenty-eight miles from north to fouth, and eighteen from eaft to weft. On the eaft fide the furface is hilly, and covered with heath, but the greater part of the ifland is flat. The coaft is rugged and rocky, but indented by numerous bays and harbours, which are fafe landing-places for fmall veffels; and at Lochindale is a harbour for fhips of confiderable burthen, with a quay, oppofite to the large village of Bowmore. There are feveral lakes; and the ifland is well watered by numerous freams and rivers, abounding with trout and falmon. In the centre of the ifland is a lake called Loch Finlagan, three miles in circumference, with the iflet of the fame name in the middle, the ancient refidence of the Macdonalds, the great lords of the ifles; but the palaces and offices are now in ruins. Inftead of a throne, the chief flood on a ftone feven feet fquare, in which there was a hollow cut to receive his feet: here he was crowned and anointed, in prefence of his chieftains, by the bifhop of Argyll and feven inferior priefts. The ftone is ftill preferved. The ceremony, after the new lord had collected his kindred and vaffals, was truly patriarchal. Having put on his armour, helmet, and fword, he took an oath to rule as his anceftors had done; to govern as a parent would his children: his people, in return, fware that they would render him the obedience due to a parent. Anciently, the dominions of this potentate included Ifla, Jura, Colonsfay, Mull, Arran, &c.: and the peninfula of Kintyre ufually fared the fate of the ifles; for we find that, in 1093, after one of the grants of the kings of Scotland, the lord of the ifles, in order to bring Kintyre within the compafs of the grant, had his barge drawn under fail over the ithmus of Tarbert; after which, confidering his power, not even the Scottifh monarch was fo hardy as to deny that Kintyre was an ifland. About the year 1586, the dominion of the ifles confifted only of Ifla, Jura, Kintyre, and Knapdale; fo reduced was it from its former extent during the reign of James III. Near Finlagan is another little ifle, called Ilan-na-corrle, *i. e.* the ifland of Council, where thirteen judges constantly fat to decide differences between the fubjects of the Macdonalds, for which they received the eleventh part of the value of the contefted property.

In the first isle were buried the wives and children of the lords of the isles: but their own bodies were deposited in the more sacred ground of Iona. Besides the castle on the island, these powerful lords had a house and chapel at Laggannon, on the side of Loch-in-dal; a strong castle on a rock in the sea, at Dunowaick, at the south-east end of the island; for, after their expulsion from the Isle of Mann, in 1304, they made this island their place of residence; sometimes making their abode at Dalreudhain in Kintyre, where the modern burgh of Campbeltown is situated. The island was formerly divided into four parishes, Kilchonan, Kildalton, Killarrow, and Kilmeny; but the two last are now united. The total population of the island, as stated in the statistical reports of the three parishes in 1793, was 9500. The quadrupeds, enumerated by Mr. Pennant, besides the domestic animals, are weasels, otters, and hares; the latter dark-coloured, small, and bad runners. The birds are eagles, peregrine falcons, muir-fowl, ptarmigans, and red-breasted geeseanders. Vipers swarm in the heath; and the natives are said to cure the wound by a poultice of hemlock and henbane. In this island several ancient diversions and superstitions are still preserved: the latter, however, are almost extinct, or only lurk among the very meanest of the people. Yet the power of fascination still retains a strong hold on their minds. The late-wakes, or funerals, were attended with sports and dramatic entertainments, composed of many parts; and the actors often changed their dresses suitable to their characters. The subject of the drama was historical, and preserved by memory. The general language of the common people is the Gaelic; yet English is well understood, and taught in all the schools. The chief amusements are singing and dancing; in the latter are exhibited an ease and gracefulness of motion peculiar to this island. Ila abounds with mines of lead and copper, which are very rich, and have been long wrought. There are also vast quantities of that ore of iron called bog-ore, of the concrete kind, and below it large strata of vitriolic mundic. Near the veins of lead are found specimens of barytes and excellent emery. A small quantity of quicksilver has been found in the muirs, and it is probable that a more attentive search would discover more of that valuable mineral. Limestone and marble are abundant; but of these the inhabitants are scarcely acquainted with the value. Pennant's Tour to the Hebrides.

ILA, in *Hindoo Mythology*, a female who appears in several undefined or equivocal characters. Sir William Jones notices her as the daughter of the seventh Menu, or Noah (see MENU), and wife of a son of Chandra, or the Moon. She is thus one of the maternal ancestors of both the great classes of people distinguished among the Hindoos by the titles of children of the sun, Surya-vansa (see SURYA-VANSA), and children of the moon, Chandra-vansa; Ila's father, Menu, being of the former race, and hence surnamed Vaivaswata, or offspring of the sun. (See VAIVASWATA.) In another of her characters she appears to be a personification of the earth, and the wife of Menu or Noah; in another as his son: in all of which may be traced some appearance of allegory referring to the important part borne by the great restorer of our species, as parent and protector of terrestrial productions. On one occasion she incurred the displeasure of Parvati, the Juno of the Hindoo Olympus, who cursing her, caused her to become alternately one month a man and a month a woman; but by the efficacy of devotions paid to a linga (see LINGA), the symbol of Siva, she was restored to her permanency of sex through the favour, thus propitiated, of that divinity. This fable we shall not attempt to explain. See Moor's Hindoo Pantheon.

ILAK, or JALAK, in *Geography*, a town of Nubia, on the Nile, which some suppose to have been the site of the ancient Meroe. N. lat. 17° 48'. E. long. 34° 10'.

ILAMBA, or ELUANÉ, the name of two provinces of Africa, in the kingdom of Angola; the Upper is the more inland, and the Lower nearer the Atlantic. Both are fertile, and yield a considerable revenue to the crown of Portugal.

ILANTZ, the capital of the Grey league, a small town of Switzerland, containing about 60 houses, and partly surrounded by walls. It is the place where the general diet of the three leagues assembles every third year. The adjacent country is fertile in every species of grain and pasture. The points of view are extremely fine, exhibiting a small plain skirted by cultivated mountains, and backed by a ridge of barren rocks which bound the valley of Lugnetz. N. lat. 46° 40'. E. long. 9° 18'.

ILANTZINSKOI, a town of Russia, in the government of Irkutsk; 10 miles N.N.W. of Verchnei or Udinsk.

ILAT, a small island on the east coast of the island of Bouro. S. lat. 3° 35'. E. long. 127° 33'.

ILATHERA BARK. See CLUTIA.

ILBERG, in *Geography*, a town of Sweden, in the province of Warmeland; six miles N.W. of Carlstadt.

ILCHESTER, properly IVELCHESTER, is an ancient borough, market-town, and parish in the hundred of Tintinhull, Somersetshire, England, and is situated on the river Ivel. Its Roman name was *Ipsalis*, and it was one of the most eminent stations the Romans possessed in these parts. It was by them environed with a strong wall and deep ditch, which originally was filled with water from the river. Its form was an oblong square, the Fosse-road passing through it from north-east to south-west. The vestiges both of the wall and ditch are still discernible, the former being regularly composed of stone and brick-work intermingled: the ditch on the north-west side is now filled up, and become a road called Yard-lane. The Fosse-road was here paved with large flag-stones; some of which are visible in the old ford through the river near the bridge. At the time of the Norman conquest, Ivelchester was a city of considerable note, and contained several parish churches. Vast arches and immense foundations of ancient buildings lie beneath the surface of the ground; and the entire site of the old city is filled with subterranean ruins. The present town exhibits but small indications of its former greatness. It consists of four streets but indifferently built; and has one parish church, and a meeting-house for Dissenters. The church has a tower, fifty feet high, constructed of Roman stone. The assizes for the county were fixed to be held here by a patent granted by Edward III., but they have long since been held only alternately with Wells, Taunton, and Bridgewater. The county gaol is still here. The civil government of this borough is vested in a bailiff and twelve capital burgesses, who, together with the inhabitants not receiving alms, return two members to parliament. The first return was 26 Edward I. An hospital for the entertainment of pilgrims and poor travellers was founded, about the year 1226, by William Dacus: it was afterwards converted into a nunnery; the ruins are still extant. A weekly market on Wednesday has existed here ever since the conquest, but has greatly declined. Here are two annual fairs. Ilchester is 122 miles distant from London: the return under the population act of 1801 was 138 houses, and 942 inhabitants. The celebrated philosopher Roger Bacon, justly accounted the wonder of his age, was born in this town, A. D. 1214. Collinson's History of Somersetshire, vol. iii.

ILDINSKOI, a cape of Russia, in the Pacific ocean, near the northern part of Kamtschatka. N. lat. 59° 15'. E. long. 164° 14'.

ILDUM, in *Ancient Geography*, a town of Spain, belonging to the Ilercaones, at some distance from the sea, N.E. of Segobriga. In Antonine's Itinerary it is marked on the route from Dertofa to Saguntum.

ILERAY, in *Geography*, one of the smaller western islands of Scotland, near the N. coast of Benbecula. N. lat. 57° 30'. W. long. 7° 25'.

ILERCAONES, in *Ancient Geography*, a people of Spain, in the Tarragonensis, towards the mouth of the Ebrus.

ILERDA, or LERIDA, a town of Spain, upon the Sicoris: its situation at the foot of the Pyrenees exposed it incessantly to the horrors of war from the time when the Romans began to penetrate into Spain. Under Gallienus it was almost entirely destroyed by the Barbarians, who, migrating from Germany, ravaged the western parts of the empire.

ILERGETES, a people of Hither Spain, E. of the Vascones. Their principal towns were Ilerda, Bergusia, and Ofca.

ILES, in *Agriculture*, a term provincially applied in some places to denote the beards or awns of different descriptions of grain, such as barley, wheat, &c. See AWNS.

ILETERTON, in *Geography*, a town of Thibet, 30 miles S.W. of Cha-tcheou.

ILEUM, in *Anatomy*, the third division of the small intestine. See INTESTINE.

ILEX, in *Botany*. Linn. Gen. n. 172. Reich. 184. Schreb. 232. Juss. 379. Mart. Mill. Dict. v. 2. Smith Fl. Brit. 192. Aquifolium, Tournef. 371. Class and order, *Tetrandria Tetragynia*. *Polygamia Dioecia*, Hudf. Nat. Ord. *Dumosea Rhamnii*, Juss.

Gen. Ch. Cal. Perianth four-toothed, very small, permanent. Cor. one-petalled, four-parted, wheel-shaped; divisions roundish, spreading, rather large, with cohering claws. Stam. Filaments four, awl-shaped, shorter than the corolla, anthers small. Pist. Germen roundish; style none; stigmas four, obtuse. Peric. Berry roundish, four-celled. Seed solitary, bony, oblong, obtuse, gibbous on one side, cornered on the other.

Ess. Ch. Calyx four-toothed. Corolla wheel-shaped. Style none. Berry four-seeded.

1. *I. aquifolium*. Common Holly. Linn. Spec. 181. Syst. 168. Reich. 1. 354. Hort. Cliff. 40. Upf. 22. Hudf. Engl. 446. Wither. Ar. 168. Mill. fig. t. 46. Hunt. Evel. 262. Thunb. Jap. 79. Lour. Cochinch. 91. (Aquifolium, Hall.) Helv. n. 667. Ilex, Scop. Carn. n. 177. Varieties α . *I. aculeata baccifera*, Bauh. Pin. 425. Aquifolium vulgo, Bauh. Hist. 1. 114. Tourn. Int. 600. Aquifolium, Ger. 1155. Raii Hist. 1622. Syn. 466. β . *I. heterophylla*. Various leaved Holly. Ait. Hort. Kew. 1. 169. "Leaves toothed, spiny, and entire." γ . *I. crassifolia*. Thick-leaved Holly. Ait. Hort. Kew. 1. 169. "Leaves thicker, equally ferrate." δ . *I. recurva*. Slender Holly. Ait. Hort. Kew. 1. 169. "Leaves narrower, recurved." ϵ . *I. ferox*. Hedgehog Holly. Ait. Hort. Kew. 1. 169. Linn. Syst. 168. β . Reich. 1. 354. β . "Leaves with the upper surface spiny."

2. *I. opaca*. Carolina Holly. Ait. Hort. Kew. 1. 169. "Leaves ovate, acute, spiny, smooth, flat, flowers scattered at the base of the last year's shoots." Native of Carolina: flowers in May and June.

3. *I. Perado*. Thick leaved smooth Holly. Ait. Hort. Kew. 1. 169. "Leaves ovate with a point, unarmed, almost entire." Native of Madeira: flowers in April and May.

4. *I. Prinoidea*. Deciduous Holly. Ait. Hort. Kew. 1. 169. "Leaves elliptic-lanceolate, acute, deciduous, ferrate, ferratures without prickles. Native of Carolina and Virginia: flowers in July.

5. *I. Cassine*. Dahoon Holly. Linn. Spec. 181. Reich. 1. 354. Hort. Cliff. 40. *I. caroliniana*; Mill. Dict. n. 3. Aquifolium carolinense, fol. dentatis baccis rubris. Catefb. Carol. 1. t. 31. α . *I. Cassine latifolia*. Broad-leaved Dahoon Holly. "Leaves lanceolate-oblong, ferrate." β . *I. C. angustifolia*. Narrow-leaved Dahoon Holly. "Leaves lanceolate, almost quite entire." Ait. Hort. Kew. 1. 170. "Leaves alternate, distant, evergreen, lanceolate, ferrate, ferratures acuminate." Native of Florida and Carolina.

6. *I. vomitoria*. South-sea Tea or evergreen Cassine. Ait. Hort. Kew. 1. 170. (Cassine Paragua; Mill. Dict. n. 2. fig. t. 83. f. 2. Pluk. Mant. t. 376. f. 2. Catefb. Carol. 2. t. 57.) "Leaves alternate, distant, oblong, bluntish, crenate-ferrate, ferratures without prickles." Native of West Florida. The leaves are used for making an infusion in the manner of tea; which is accounted by the Indians very wholesome, and is almost the only physic they use in some parts. The plant is supposed to be the same with that which grows in Paraguay, where the Jesuits make a great revenue from the leaves.

7. *I. asiatica*. Linn. Spec. 181. Reich. 1. 354. "Leaves broad-lanceolate, blunt, quite entire." Native of the East Indies.

8. *I. runcifolia*. Linn. Spec. 181. Reich. 1. 354. Plum. Ic. 118. 2. "Leaves wedge-form, three-cusped." Native of South America.

9. *I. integra*. Linn. Syst. 168. Thunb. Jap. 77. "Leaves oblong, obtuse, entire; peduncles one-flowered."

10. *I. rotunda*. Linn. Syst. 168. Thunb. Jap. 77. "Leaves rounded, acute, entire; peduncles umbelliferous."

11. *I. crenata*. Linn. Syst. 168. Thunb. Jap. 78. "Leaves ovate crenate, peduncles on the branches scattered, bearing two or three flowers.

12. *I. emarginata*. Linn. Syst. 168. Thunb. Jap. 78. "Leaves obovate, emarginate, flowers axillary, usually in pairs."

13. *I. ferrata*. Linn. Syst. 168. Thunb. Jap. 78. "Leaves ovate, acute, ciliate, ferrate, flowers axillary, solitary. Flowers in June."

14. *I. japonica*. Linn. Syst. 168. Thunb. Jap. 79. "Leaves opposite sessile, flowers in terminating racemes, and flowers in April."

15. *I. latifolia*. Linn. Syst. 168. Thunb. Jap. 79. "Leaves ovate ferrate, flowers axillary, aggregate."

16. *I. crocea*. Thunb. Prodr. 32. "Leaves oblong ferrate, ferratures ciliate spiny." Native of the Cape of Good Hope.

This genus consists of small trees or shrubs, with alternate leaves, evergreen, toothed and thorny; and axillary many-flowered peduncles. The common holly rises from 20 to 30 feet, and sometimes more. It grows wild in many parts of Europe, in North America, Japan, Cochinchina, &c.; and is found in woods and forests in many parts of England. In English it is called "Hulver" and "Holme." For its uses, see HOLLY.

ILEX, in *Gardening*, contains plants of the hardy evergreen tree or shrubby kinds; of which the species mostly cultivated are the common holly (*I. aquifolium*); the Dahoon holly (*I. cassine*); and the South sea tea, or evergreen cassine (*I. vomitoria*).

There are a great many varieties of both the green-leaved and variegated sorts. Of the first the common green-leaved prickly, the smooth green-leaved, the narrow ferrated green-leaved,

leaved, the green-leaved yellow-berried, the box-leaved green, and the hedge-hog green; and of the latter the common prickly, with silver striped leaves, with gold striped leaves, with blotched leaves; the smooth with white striped leaves, with yellow striped leaves, with blotched leaves, with narrow striped leaves, the blotched yellow berried; the cream-coloured, the copper-coloured, the white-leaved, the mottled-edged, the hedge-hog silver-edged, the gold-edged hedge-hog, the white-blotched hedge-hog, the yellow-blotched hedge-hog, and the painted lady variegated.

And of the second sort there are varieties with broad leaves, and with narrow leaves, with scarcely any serratures.

Method of Culture.—These plants are all capable of being increased from seeds, and by the operations of budding and grafting upon proper stocks.

The seeds or berries should be sown, as soon as they are perfectly ripened, in small beds prepared for the purpose. But as they are long in germinating, it is the practice with some to deposit them, for a year before they are sown in the beds, in pots filled with earth or sand, or in a hole in the earth, in a dry situation; the first is probably the best method. The plants mostly rise in the second spring, when they should be kept well weeded and watered. After they have had two years' growth in these beds they should be removed, and planted out in nursery rows at the distance of two feet, and one apart in the rows. They should remain in these till of a proper size to be planted where they are to remain, keeping them perfectly clean, and the ground occasionally stirred about them.

The proper seasons for removing them are either the early autumn or spring; the former in dry grounds, and the latter in those that are of a retentive nature.

In the second sort the seeds, after being prepared as above, should be sown in pots, and plunged the second spring in a gentle hot-bed, in order to bring up the plants. They should then be kept in the pots, and have protection in the winter season till they have become of hardy growth, when they may be turned out and planted in warm situations. They afterwards require protection in very severe winters by mats or other means.

And the third sort may be managed in the same way as the second, the young plants being gradually inured to the open air, having only the morning sun at first. They should be kept in the pots four or five years, as they grow slowly, being well protected in the winter. They all succeed best in a dry soil.

All the varieties of the different soils are to be continued either by budding or grafting upon stocks of the first sort. The first should be performed in the latter part of summer, and the latter in the early spring, upon stocks of two years' growth. See **BUDDING, GRAFTING, and INOCULATING.**

All the sorts and varieties are highly ornamental in the clumps, borders, and other parts of pleasure-grounds, affording much variety when judiciously intermixed. The first sort frequently rises to a large tree, having a fine white hard wood useful for various purposes. The bark also affords the substance called bird-lime, which is prepared by boiling it till the green part is capable of being separated from the white, then laying it in a cool cellar for a few days, afterwards pounding it till it becomes a tough paste, washing it repeatedly, till it gets quite clear, then placing it in an earthen vessel to ferment or become fine, when it will be fit for use.

ILEX. See **HIPPOMANE** and **QUERCUS.**

Ilex Aquifolium, in *Natural History*. The leaves of this plant were found, among others, preserved in the silt and peaty matters, below the ordinary level of the tides; at Sutton, in Lincolnshire, by Dr. De Serra and sir Joseph Banks, in 1796. Phil. Transf. 1799.

ILFRACOMB, in *Geography*, is a sea-port, market-town, and parish in the hundred of Braunton and county of Devon, England. It derives considerable trade from the herring-fishery in the Bristol channel. The peculiar situation and safety of the harbour occasion many vessels to put in here, when it is dangerous for them to enter the mouth of the river Taw for Barnstaple. In consequence of this circumstance, much of the port business of that place is transacted at Ilfracomb. Nature and art seem to have combined in forming the harbour, which, appearing like a natural basin, is almost surrounded by craggy heights, overspread with foliage. On three sides the rocks rise in a semicircular sweep; and on the fourth a bold mass of rock stretches nearly half-way across the mouth of the bay. This rock rises almost to a point; and on the top is erected a light-house, which has the appearance of a place of worship. Along the side of this rock, to the opening of the harbour, runs an artificial pier, judiciously constructed to prevent the accumulation of sand; so that by the joint assistance of the natural barrier and this piece of masonry, ships of 230 tons burthen may ride completely land-locked, and safe from the violence of the weather. An inscription, over the gate of the pier, informs us that the town was indebted for this valuable addition to its convenience and advantage, to sir Bourchier Wray, bart., who, in the year 1760, partly rebuilt, lengthened, and enlarged this extensive barrier. Previous to the year 1731, the pier was 850 feet long, but the violence of the sea having nearly destroyed it, the parliament then passed an act for repairing and enlarging it, with the harbour, &c. The town consists principally of one well-built street, extending a mile in length, from the church to the sea-side. A number of good houses, chiefly for the summer accommodation of strangers, is ranged along side of the harbour. The church is a large plain structure, but not demanding any particular notice. Camden, though prebendary of this place, scarcely mentions it in his *Britannia*. The civil government of the town is vested in a mayor, bailiffs, and other officers. Ilfracomb is 202 miles distant from London; has a well-supplied market on Saturdays; and contained, at the time of the late return to parliament, 455 houses, and 1838 inhabitants.

Three miles east of the town is Watermouth, the seat of Joseph Davie, esq. The house is situated on an eminence, having in front an inlet of the sea, which forms a most beautiful basin, environed by rocks on the right and left. The varied character of rock, lake, and dale, constitutes very singular and romantic scenery. Warner's Walk through the Western Counties. Mason's Observations on the Western Counties. Beauties of England and Wales, vol. iv.

ILGINSKAIA, a town of Russia, in the government of Irkutsk, at the conflux of the Ilga and Lena; 52 miles S. of Orlenga.

ILGINSKOI, a town of Russia, in the government of Irkutsk, on the Ilga; 140 miles N. of Irkutsk. N. lat. 54° 30'. E. long. 105° 14'.

ILHA GRANDE, an island in the Atlantic, near the coast of Brasil, about 15 miles long and three broad. S. lat. 23° 15'.

ILHEO, a small island in the Atlantic, near the coast of Africa. S. lat. 23° 30'.

ILHEOS, a sea-port town of Brasil, and capital of a district, called "Rios dos Ilheos," situated at the mouth

of a river of the same name. S. lat. 15° 25'. W. long. 36° 36'.

ILI, a river of Tartary, which runs into lake Palcati; 20 miles N.W. of Harcas.

ILIA, in *Anatomy*, the technical term for those parts of the body, which are bounded by the upper broad portions of the ossa innominata. It is one of the subdivisions of the abdominal cavity. See ABDOMEN.

ILIABAD, in *Geography*, a town of Hindooſtan, in the Carnatic; four miles S.W. of Arnee.

ILIAC, in *Anatomy*, an epithet applied to certain organs of the body, ſituated in or near the ilia. Thus we have the common or primary ilia arteries (iliacæ communes); the external and internal iliac arteries (iliaca externa et interna); veins of the ſame names, correſponding to theſe; the poſterior iliac artery (iliaca poſterior or glutæa).

ILIAC Paſſion, or *Ileus*, in *Medicine*, a term uſed by many modern writers to designate thoſe forms of inteſtinal diſeaſe, in which, after ſevere attacks of pain in the belly, the inverſion of the periltaltic motions of the inteſtines is ſuch, as to occaſion a vomiting of ſeculent matter. This may happen from any great obſtruction of the bowels; but chiefly occurs when either inflammation is induced, or a ſevere ſpaſmodic conſtriction takes place in ſome part of the canal. The ileus, therefore, is only another term for inflammation of the bowels, or enteritis in the one caſe, and for colic in the other. (See theſe articles.) The name was probably appropriated with a view of diſcriminating an affection of the ſmall inteſtines, or *ilium* (ἰλεον), from a ſimilar diſorder of the large inteſtines, or *colon*, which had been termed *colica*; but ſuch diſtinction is not eaſily aſcertained; and the *ileus* can only be conſidered as an extreme degree of *colic*, where inflammation has not actually ſupervened. The terms *miſerere mei*, *volvulus*, and *chordapſus*, have alſo been uſed as appellations of the diſeaſe. All the cauſes of obſtruction to the free paſſage of the fæces along the canal of the inteſtines, in aſmuch as they commonly induce inflammation, or ſpaſmodic contraction, and invert the periltaltic motion, may produce ileus; ſuch as *herniæ*, or ruptures, intuſuſception, *calculi*, indurated fæces, &c.; and the remedies applicable to colic and enteritis reſpectively will cure the diſeaſe. It is to be obſerved, however, that as this complete inverſion of the periltaltic motion of the canal implies the moſt ſevere degree of theſe diſeaſes, ſo it is neceſſarily an alarming and dangerous ſymptom whenever it appears.

ILIACOUR, in *Geography*, a town of Hindooſtan, in the country of the Nays; 20 miles N.E. of Tellicherry.

ILIACUS INTERNUS, in *Anatomy*; iliaque, ilio-trochanterian; a muſcle of the lower extremity, placed in the iliac ſoſſa, and at the upper and anterior part of the thigh, and extending from the two anterior thirds of the criſta of the ilium to the trochanter minor of the thigh-bone. It is thin and broad above, narrower and thicker below, ſo as to be in ſome degree fan-shaped. Its anterior ſurface is concave above and convex below; that portion of it which is above the crural arch is covered by the peritoneum, looſely attached by cellular ſubſtance, by the cæcum on the right, and by the ſigmoid flexure of the colon on the left ſide of the body. The anterior crural nerve is alſo in contact with it here. Below the crural arch, the iliacus internus is covered on the outſide by the ſartorius, on the inſide by the crural veſſels and nerve, and in the middle by the *faciâ lata*. The poſterior ſurface covers the iliac ſoſſa, and is attached to the two ſuperior thirds of this excavation; it covers alſo the anterior inferior ſpine of the ilium, and is attached to its inner edge; it then covers the upper end of the rectus, and

the hip-joint, to the orbicular ligament of which it is attached.

The internal edge is covered above by the pſoas magnus; below, theſe two muſcles are united into one maſs. The outer edge is extended obliquely from the anterior ſuperior ſpine of the ilium to the baſe of the little trochanter; it is covered by the ſartorius, and covers a little of the triceps. The upper edge is attached to the two anterior thirds of the inner margin of the criſta of the ilium, and to the ilio-lumbar ligament. From theſe parts the muſcle deſcends, growing thicker and narrower. Confounded with the pſoas, it paſſes behind the crural arch, deſcends obliquely from without inwards, and is attached to the trochanter minor, and to the neighbouring part of the body of the thigh-bone.

The fleſhy fibres of this muſcle ariſe from the iliac ſoſſa, the criſta and ſpines of the bone, and terminate on the external and poſterior ſurface of the tendon common to it with the pſoas magnus. The internal ones are the ſhorteſt, and are nearly vertical; thoſe in the middle are longer and paſs obliquely from without inwards; the external are the longeſt and ſtill more oblique. The latter accompany the tendon even to the trochanter, and ſome are attached to the former below that proceſs.

The iliacus internus carries the thigh-bone forwards upon the pelvis, and rotates it ſo as to twiſt the limb outwards. It bends the pelvis forwards upon the thigh. It produces the firſt of theſe effects in progreſſion, when the limb, which had been left behind, is elevated and carried in front of the other: the ſecond action is exhibited when the trunk of the body is carried forwards on the limb ſo advanced.

ILIAD, *Iliad*, the name of an ancient epic poem, the firſt, and fineſt, of thoſe compoſed by Homer. See EPIC Poem.

The critics maintain the Iliad to be the firſt, and yet the beſt, poem that ever appeared in the world: Ariſtotle's Poetics are almoſt wholly taken from it; the philoſopher had nothing to do but to form precepts from the poet's practice. Some authors tell us, that Homer invented not only poetry, but all other arts and ſciences; and that there are the viſible marks of a perfect knowledge in every one of them to be ſeen in the Iliad.

The word is derived from the Greek *Ἰλιος*, of *Ἰλιον*, *Ilium*, Troy, a famous city of Aſia, which the Greeks beſieged for the ſpace of ten years, and at laſt deſtroyed, on account of the rape of Helena, which makes the ſubject of the work.

The poet's deſign in the Iliad was, to ſhew the Greeks, who were divided into ſeveral little ſtates, how much it was their intereſt to preſerve a harmony and good underſtanding among them. In order to which, he ſets before their eyes the calamities that beſet their anceſtors from the wrath of Achilles, and his miſunderſtanding with Agamemnon; and the advantages that afterwards accrued to them from their union. See FABLE.

In order to form a proper judgment of the diſtinguiſhing excellence of this poem, it is neceſſary, ſays Dr. Blair, (Lectures, vol. iii.) that the reader ſhould tranſport his imagination almoſt three thouſand years back in the hiſtory of mankind, and conſider that he is about to peruſe the moſt ancient book in the world, next to the Bible. He will thus diſtinctly himſelf of all our modern ideas of dignity and refinement; nor will he be led to look for the correſtneſs and elegance of the Auguſtan age. What he ought to expect is a picture of the ancient world, exhibiting characters and manners that poſſeſs a conſiderable tincture of the ſavage ſtate. The opening of the Iliad is deſtitute of that kind of dignity, which a modern expects to find in a great

epic poem. The subject is merely the quarrel of two chieftains about a female slave. The priest of Apollo beseeches Agamemnon to restore his daughter, who, in the plunder of a city, had fallen to Agamemnon's share of booty. Upon his refusal, Apollo, at the prayer of his priest, sends a plague into the Grecian camp. The augur, when consulted, declares, that Apollo cannot be appeased without restoring the daughter of his priest. Agamemnon is enraged at the augur; professes that he likes this slave better than his wife Clytemnestra; but as it was necessary to restore her in order to save the army, he insults upon having Briseis, the slave of Achilles, in her room. Achilles is enraged at this demand, reproaches him for his rapacity and insolence, and solemnly swears, that, in revenge for this treatment, he will withdraw his troops, and afford the Grecians no farther assistance against the Trojans. He accordingly withdraws. His mother, the goddess Thetis, interests Jupiter in his cause; who, for avenging the wrong which Achilles had suffered, takes part against the Greeks, and thus plunges them into deep distress; until at length Achilles is pacified, and he and Agamemnon are reconciled. Such is the basis of the whole action of the Iliad. (See ACTION.) In the days of Homer no subject could have been more happily chosen than that of the Iliad; which laid the foundation of the Trojan war. So great a confederacy as the Grecian states, under one leader, and the ten years' siege which they carried on against Troy, must have spread far abroad the renown of many military exploits, and interested all Greece in the traditions concerning the heroes who had most eminently signalized themselves. Upon these traditions Homer, who is supposed to have lived two or three centuries after the Trojan war, grounded his poem; and the interval of time that elapsed between the war and the period of his describing it, left him at full liberty to blend fable with the records of true history. The subject of his choice was only that part of the Trojan war which comprehends the quarrel betwixt Achilles and Agamemnon, and the events resulting from that quarrel. These, though they included merely an interval of 47 days, yet occupy the most interesting and most critical period of the war. By this management he has given greater unity to what otherwise would have been an unconnected history of battles. He has also gained one hero, or principal character, viz. Achilles, who reigns throughout the work; and he has shewn the pernicious effects of discord among confederated princes. The praise of high invention has in every age been justly allowed to Homer; and this invention is signally displayed in the prodigious number of incidents, of characters, divine and human, with which his poem abounds; the surprising variety with which he has diversified his battles, in the wounds and death, and little history pieces, of almost all the persons slain. His judgment is also no less conspicuous than his invention. His story is uniformly conducted with great art. He rises upon us gradually; his heroes appear, in succession, as objects of our attention: the distress thickens as the poem advances; and every thing is so contrived as to aggrandize Achilles, and to render him, agreeably to the intention of the poet, the capital figure. Homer, however, is principally distinguished, above all other writers, in the characteristical part. His exhibition of characters is rendered lively and spirited by his dramatic mode of writing, or by his continually recurring to dialogue and conversation. As this is the most simple and artless, it is evidently the most ancient. See a specimen of it in Gen. xlii. 7—15. To the speeches of Homer, which are upon the whole characteristical and lively, we owe, in a great measure, the admirable display which he has given of human nature. Every

one who reads him, becomes familiarly and intimately acquainted with his heroes. We seem to have lived among them and conversed with them. His art in painting characters is eminently displayed in those of Helen and Paris. As for his character of Achilles; see *ACHILLES*. The gods also made a great figure in the Iliad; inasmuch that Homer has become the standard of poetic theology. By the intervention of his gods, he has greatly diversified his battles; and by frequently shifting the scene from earth to heaven, the mind is agreeably relieved in the midst of so much blood and slaughter. It has, however, been objected to Homer, that his gods want dignity; but in apology for him, it should be remembered, that, according to the fables of those days, the gods are but one remove above the condition of men, and possess all the human passions. Nevertheless, though Homer frequently degrades his divinities, he knows how to make them appear, in some conjunctures, with the most awful majesty. Jupiter, the father of gods and men, is, for the most part, introduced with great dignity, and several of the most sublime conceptions in the Iliad are founded on the appearances of Neptune, Minerva, and Apollo, on great occasions. As to Homer's style and manner of writing, it is easy, natural, and in the highest degree animated. In his style he is the most simple of all the great poets, and in this respect it resembles most that of the poetical parts of the Old Testament. Of the simplicity of his style, we can form no adequate idea in the midst of the elegance and luxuriance of the language of Mr. Pope's translation, however excellent that translation may be deemed as a poetical performance. In the midst, however, of that plainness of diction for which Homer is distinguished, there are every where breaking forth upon us flashes of native fire, of sublimity and beauty, which hardly any language but his own could preserve. His versification has been universally acknowledged to be uncommonly melodious; and to carry, beyond that of any poet, a resemblance in the sound to the sense and meaning. In narration, continues Dr. Blair, Homer is, at all times, remarkably concise, which renders him lively and agreeable: though in some of his speeches he is tedious. He is every where descriptive, and descriptive by means of those well-chosen particulars, which form the excellency of description. Virgil gives us the nod of Jupiter with great magnificence:

“Annuit; et totum nutu tremefecit Olympum.”

But Homer, in describing the same thing, gives us the fable eye-brows of Jupiter bent, and his ambrosial curls shaken, at the moment when he gives the nod; and thereby renders the figure more natural and lively. In drawing our attention to any interesting object, he paints it in a manner to our sight. The shot of Pandarus' arrow, which broke the truce between the two armies, as related in the 4th book, may be given for an instance, and, above all, the admirable interview of Hector with Andromache in the 6th book, where all the circumstances of conjugal and parental tenderness; the child affrighted with his father's helmet and crests, and clinging to the nurse; Hector pulling off his helmet, taking the child into his arms, and offering up a prayer for him to the gods; Andromache receiving back the child with a smile of pleasure, and at the same instant bursting into tears, *δακρυοισι γελασασα*, as it is finely expressed in the original, form the most natural and pleasing picture that can possibly be imagined. Homer, it is observed, particularly excels in battles. In describing these, his genius is most highly displayed, inasmuch that Virgil's

gil's battles, and indeed those of most other poets, are cold and unanimated in comparison of those of Homer. No poet abounds so much with similes. Several of these are extremely beautiful: such as those, of the fires in the Trojan camp compared to the moon and stars by night; Paris going forth to battle, to the war-horse prancing to the river; and Euphorbus slain, to the flowering shrub cut down by a sudden blast; all which are among the finest poetical passages that are any where to be found. His comparisons, however, are not reckoned among his greatest beauties, for several reasons suggested by Dr. Blair. See Lectures, vol. iii. p. 247. For the conduct of the Iliad, see father Bossu, Madam Dacier, and M. De la Motte.

The Iliad is divided into twenty-four books, which are marked with the letters of the alphabet. Pliny gives us an account of an Iliad written on so very slender a paper, that the whole might be contained in a nut-shell.

The ingenious Mr. Barnes, of Cambridge, has very strenuously attempted to prove Solomon to have been the author of the Iliad.

The English translation of the Iliad by Mr. Pope is well known. This translation, though faithful in the main to the original, and though thought by some to have occasionally improved even Homer, is nevertheless no other than Homer modernized. There is, as Dr. Blair observes, no author to whom it is more difficult to do justice in a translation than Homer.

ILIGATANGAN, in *Geography*, one of the small Philippine islands, N. W. of Leyta. N. lat. $11^{\circ} 24'$. E. long. 124° .

ILIGNO BAY, a bay on the S. W. coast of the island of Mindanao. N. lat. $7^{\circ} 30'$. E. long. 20° .

ILIIOS, in *Anatomy*, a name given to one of the divisions of the os innominatum. See EXTREMITIES.

ILIJA, in *Geography*, a town of Asiatic Turkey, in the province of Diarbekir, situated on the Euphrates; 60 miles W. of Diarbekir.

ILIM, a river of Russia, which rises in N. lat. $54^{\circ} 20'$, and runs into the Angara, near Samakina, N. lat. $57^{\circ} 25'$, E. long. $102^{\circ} 2'$.

ILIMSK, a town of Russia, on the Ilim, in the government of Irkutsk, in the environs of which are found the most beautiful black fables; 152 miles N. of Irkutsk. N. lat. $56^{\circ} 30'$. E. long. $103^{\circ} 56'$.

ILINSKA, a town of Russia, in the government of Irkutsk, on the Lena; 56 miles N. E. of Kirensk.

ILINSKOI, a town of Russia, in the government of Tobolsk; 8 miles N. of Atchinsk. — Also, a town of Russia, in the government of Tver; 32 miles E. N. E. of Tver. — Also, a town of Russia, in the government of Olonetz; 8 miles N. of Olgkoi. — Also, a town of Russia, in the government of Novgorod, on the river Sula, opposite to Tcherepovetz.

ILION, a town of Thibet; 25 miles W. N. W. of Haratoube.

ILION, or ILIUM, in *Ancient Geography*. See TROY.

ILIPA, ALCOLEA, a town of Spain in Bætica, N. of Hispalis, upon the right bank of the Bætis. Strabo relates, that the environs of this town had mines of silver. Its medals bear the head of a female, supposed to be Ceres, with emblems of abundance.

ILIPPE, in *Botany*. See BASSIA.

ILIPULA, NIEBLA, in *Ancient Geography*, a town of Spain; in Bætica, W. of Tucci. Livy calls it *Ilipa*, but Ptolemy and M. D'Anville name it *Ilipula*.

ILIS, in *Geography*, a town of South America, in the province of Popayan; 20 miles S. of Pasto.

ILISSIDES, in *Mythology*, a surname of the Muses, from the river Ilissus in Attica, the waters of which were reckoned sacred.

ILISSUS, in *Ancient Geography*, a town of Attica, called by Pliny "locus Ilissos." — Also, a small river of Attica, on the route from Athens to Cyno-Sarges, which had to the west a small river called Eridanus. This river was consecrated to the Muses and other divinities.

ILITA, in *Hindoo Mythology*, a name of Parvati, consort of Siva; similar, perhaps, to *Idita*, which see.

ILITHYA, derived from *ἐλθω*, to spring from, in *Mythology*, the daughter of Juno, and sister of Hebe, who presided over deliveries. This goddess had a temple at Rome, in which were registered the birth and death of every citizen; a custom established by Servius Tullius.

ILIVILIHU, in *Natural History*, a name given by the inhabitants of the Philippine islands to a very remarkable species of birds, common in that country. It is called by some writers *coturnix parvula montana*, the small mountain quail, and it is indeed a quail in all the characters; but it is very beautifully variegated in its colours, and is smaller than a sparrow. It lives in hilly places, and is a very well tasted bird. See QUAIL.

ILIUM OS, *Fraçures of*, in *Surgery*. See FRACTURE.

ILL, L', in *Geography*, a river of France, which rises in the department of the Upper Rhine, near Fernette, and runs into the Rhine near Strasburg; navigable for boats from Schlettstat.

ILLA, in *Botany*. See CALLICARPA.

ILLAHABAD, in *Geography*, a town of Hindoostan, in the circar of Mahur; 35 miles N. of Neermul.

ILLAHON, a town of Egypt; 12 miles S. E. of Fayoum.

ILLAMBAZAR, a town of Hindoostan, in Bengal; 25 miles S. S. E. of Nagore.

ILLE, a town of France, in the department of the Eastern Pyrenees, on the Teck, containing about 2000 inhabitants; 12 miles W. of Perpignan.

ILLE, a river of France, which rises near Dingé, in the department of the Ille and Vilaine, and joins the Vilaine near Rennes.

ILLE and VILAINE, a department of the north-west region of France, bounded on the N. by the English channel, and the department of the Channel, on the E. by the department of the Mayenne, on the S. by the Lower Loire, and on the W. by the departments of the Morbihan and the North coast, about 60 miles in length from N. to S. and from 20 to 48 in breadth, from E. to W. It takes its name from the two rivers Ille and Vilaine, which unite together at Rennes, the capital of the department. This department contains 347 square leagues, and 488,605 inhabitants. It is divided into six districts, *viz.* St. Malo, including 101,089 inhabitants, Fougères, 76,577, Vitré, 74,885, Redon, 66,707, Montfort, 55,971, and Rennes, 113,376. The number of cantons is 43, and of communes 352. The contributions amount to 3,014,223 fr. and the expences charged upon it to 421,693 fr. 66 cent. This department, of a clayey soil and intersected by gentle eminences, is indifferently fertile, and badly cultivated; producing scanty crops of grain, flax, fruits, and good pastures on the borders of the rivers. The fertile marsh of Dol is reckoned the Delta of the territory. There are considerable forests, mines of iron and lead, quarries of stone, &c.

ILLECEBRA, in *Botany*. See SEDUM.

ILLECEBRUM, Illecebra of Pliny, pretty or enticing plants. Linn. Gen. n. 290. Reich. 313. Schreb. 407. Juss.

ILLECEBRUM.

89. Sm. Fl. Brit. 267. (*Corrigiola*, Dill. Gen. 169. Moehr 106. *Paronychia*, Tournef. 281.) Clafs and order, *Pentandria Monogynia*. Nat. Ord. *Holoraceae*, Linn. *Amaranthi*, Juss.

Gen. Ch. Cal. Perianth five-leaved, cartilaginous, five-cornered; with coloured leaflets, which are sharp with distant points, permanent. Cor. none. Stam. Filaments five, capillary, within the calyx. Anthers fimple. Pist. Germen ovate, sharp, ending in a short bifid style; stigma fimple, obtufe. Peric. Capsule roundish, acuminate, both ways five-valved, one-celled, covered by the calyx. Seed fingle, roundish, sharp on both fides, very large.

Obf. The fruit in feveral fpecies is different.

Efl. Ch. Calyx five-leaved, cartilaginous. Corolla none. Stigma fimple. Capsule five-valved, one-feeded.

1. *I. brachiatum*. Linn. Syft. 247. Reich. 1. 580 (*Achyranthes brachiata*; Linn. Mant. 50.) "Stem upright, herbaceous, brachiata, leaves oppofite, even, annual." Native of the East Indies.

2. *I. fanguinolentum*. (*Achyranthes fanguinolenta*; Linn. Spec. 294. *Verbena rubra*; Rumph. Amb. 7. 60. t. 27. f. 2.) "Frutescent, leaves oppofite, fpike compound, heaped." Perennial. Native of the East Indies.

3. *I. canarienfis*. Linn. Syft. 248. Suppl. 161. "Shrubby, leaves elliptic, acute, fipules and bractes ovate, shorter, pappules terminating, dichotomous." Found on the ifland of Teneriffe by Maffon.

4. *I. lanatum*. Linn. Syft. Reich. Ait. Hort. Kew. Lour. Cochinch. Vahl. Symb. (*Achyranthes lanata*; Linn. Spec. 296. Mill. fig. t. 11. f. 1. *A. villofa*; Forsk. Defcr. 48. n. 64. *Chenopodium*, Burm. Zeyl. t. 26. f. 1. *Amaranthus*, Pluk. Phyt. t. 75. f. 8. "Spikes fub-aggregate, shorter than the leaf, branches long, rod-like." β . Great woolly illecebrum. "Spikes folitary, on fpreading branchlets." γ . with round leaves. Retz. Obf. 2. 13. n. 28. β . "Leaves ovate, fomewhat hairy, fpike lateral, calyxes woolly." Native of the East Indies and Cochinchina.

5. *I. javanicum*. Linn. Syft. Reich. Ait. Hort. Kew. (*Calofia lanata*; Linn. Spec. 298. Syft. 247. Reich. 1. 579. Mill. Dict. n. 6. *Irefine javanica*; Burm. Ind. 212 t. 65. f. 2. *Amaranthus albus*; Pluk. Phyt. t. 19. f. 1.) "Leaves lanceolate, tomentofe, fpike cylindrical, numerous, terminating." Native of the East Indies.

6. *I. verticillatum*. Whorled knot-grafs. Linn. Spec. Reich. Hort. Cliff. Hudf. Angl. Wither. Arr. Fl. Dan. Krock. Siles. (*Corrigiola*; Dill. Giff. 169. Raii Syn. 160. *Paronychia ferpyllifolia paluftris*; Vaill. Par. t. 15. f. 7. Tournef. par. ed. Angl. 2. 160. *Polygonum ferp. verticill.* Raii Syn. ed. 2. 160. Pet. Brit. t. 10. f. 7. *Polygala repens*; Ger. 449. 1. Emac. 163. Park. Theat. 1333.—*Nivea*; Bauh. Pin. 215. "Flowers in whorls, naked; ftems procumbent." Native of many parts of Europe in wet pafures; flowers in July and Auguft. This is the only British fpecies.

7. *I. fuffruticofum*. Shrubby I. or knot-grafs. Linn. Sp. 298. Reich. 1. 581. (*Paronychia hispanica fruticofa*, *myrtifolia*; Tourn. Inf. 508. Mill. Dict. v. 2. n. 4.) "Flowers lateral, folitary, ftems fuffruticofe." Native of the fouth of Europe. Flowers from May to Auguft.

8. *I. cymofum*. Linn. Sp. and Syft. Reich. Ger. Prov. 337. 3. (*Polygonum capitulis ad genicula echinatis*; Bocc. Sic. 41. t. 20. f. 3. Raii Hift. 214.) "Spikes cymed, directed one way, item diffufed." Native of the fouth of France, the ifle of Elbe, and Portugal.

9. *I. ariftatum*. Ait. Hort. Kew. 1. 290. "Flowers fubfcafcled, leaves lanceolate, filky, awned." Native of the Canary iflands. Flowers in June and July.

10. *I. Paronychia*. Mountain I. or knot-grafs. Linn. Sp. Reich. Ger. Prov. (*I. ferpyllifolium*; Villars. Dauph. 2.

558? an *polygonifolium*, ejufd. 557? *Herniaria*; Linn. Hort. Cliff. 41. Upl. 54. *Polygonum minus caudicans*; Bauh. Pin. 281. *P. montanum niveum*; Park. Theat. 445. 1.) "Flowers fenced with fhining bractes, ftems procumbent, leaves even." Native of the fouth of Europe. Flowers in July and Auguft.

11. *I. divaricatum*. Forked I. Ait. Hort. Kew. 1. 291. "Flowers bracted, fubfcafcled, peduncles dichotomous, panicled, leaves ovate-oblong, petioled." Native of the Canary iflands. Flowers in July and Auguft.

12. *I. capitatum*. Linn. Reich. Villars. Ger. Prov. (*Herniaria erecta*; Sauv. Monfp. 129. *Paronychia narbonenfis erecta*; Tournef. Inf. 508. *Polygonum minus caudicans*, &c. Magn. Monfp. *P. montan. niv. minimum*; Lob. Ic. 420.) "Flowers with fhining bractes, hiding terminating heads, ftems fomewhat erect, leaves ciliate, villofe underneath." Native of Provence, Spain, and the Levant.

13. *I. benghalenfis*. Linn. Reich. "Stem upright, herbaceous, leaves alternate and oppofite, lanceolate, pubefcent." Native of Bengal, Java, &c. in the East Indies.

14. *I. arabicum*. Linn. Reich. (*Corrigiola albella*; Forsk. Defcr. 207. n. 31.) "Flowers fcattered, heaped, bractes fhining, equalling them, ftems procumbent." Found in Arabia by Forskhal.

15. *I. achyrantha*. Linn. Reich. (*Achyranthes repens*; Linn. Sp. ed. 1. *Achyranthes repens*, fol. Bliti pallidi; Dill. Elth. 8. t. 7. f. 7.) "Stems creeping, hairy, leaves ovate, mucronate; one oppofite, fmaller, heads fubglo-bular, fomewhat fpiny. Native of Buenos Ayres.

16. *I. polygonoides*. Linn. Reich. (*Gomphrena polygonoides*; Linn. Sp. ed. 1. *Herniaria*; Brown. Jam. *Amaranthoides*; Herm. Parad. Sloan. Jam. Raii Suppl. *Amaranthoides*; Plum. Ic. 94. t. 21. f. 2. "Stems creeping, rough-haired, leaves broad-lanceolate, petioled, heads orbiculate, naked." Native of America on fea-fhores.

17. *I. ficoideum*. Linn. Reich. Jacq. Amer. Peët. 43. t. 90. (*Gomphrena ficoidea*; Linn. Syft. Jacq. Amer. *Amaranthoides marina*, &c. Plum. Sp.) "Stems creeping, fmooth, leaves broad, lanceolate, petioled, heads orbiculate, pubefcent." Native of America, on the coaft; now wild in Spain. A noxious weed in Martinico.

18. *I. feffile*. Linn. Reich. Vahl. Symb. Lour. Cochinch. (*Gomphrena feffilis*; Linn. Sp. ed. 1. *Alternanthera*; Forsk. Defcr. 28. *Amaranthus humilis*; Burm. Zeyl. *Amaranthoides humile*; Pluk. Phyt. Olu. Squillarum; Rumph. Amb. 6. 37. t. 15. f. 1. Coluppa; Rheed. Mal. 10. 21. t. 9.) "Stems creeping, bifarioufly tomentofe, leaves lanceolate, fubfeffile, heads oblong, fmooth." Native of the East Indies, and in wet places about Canton in China. Flowers from July to October.

19. *I. vermiculatum*. Linn. Reich. (*Gomphrena vermicularis*; Linn. Sp. Brown. Jam. *Caraxeron humile*; Vaill. Act. Par. 1722. *Amaranthoides humile*, &c. Herm. Parad. t. 15. *Amarantho affinis*, &c. Breyn. Prodr. 2. *Trifolii fipica crithmum marinum non fpinofum brafilienfis*; Raii Hift. 1331.) "Stems creeping, fmooth, leaves fubcylindric, fleshy, heads oblong, fmooth, terminating." Native of Brazil and Curagoa; Jamaica, and the fandy fhores of South America.

20. *I. alfinifolium*. Linn. Reich. *Paronychia hispanica fupina alimifolia*, *capitulis minoribus*; Tournef. Inf. 508. "Stems diffufed, leaves ovate, flowers heaped, bractes fhining." Native of Spain.

21. *I. frutescens*. L'Herit. Stirp. Nov. 4. 75. t. 37. "Stem shrubby, diffufed, dichotomous, leaves oppofite, mealy." Flowers and ripens its feeds in fummer. The East

Indian.

Indian I. *Monsonia* has elegant spikes of reddish flowers. The whole genus requires revision, and a comparison with *Herniaria*, *Celosia*, &c.

The 7th, 8th, 10th, and 12th species, which are natives of the south of Europe, may be propagated by seeds on a bed of light earth in the beginning of April. When the plants are come up, they should be transplanted either into pots, or a warm dry border, watering and shading them, till they have taken new root. In an ordinary winter they will live in England in the open air. Those that are in pots should, in severe winters, be placed in a common frame, so as to enjoy the open air in mild weather, and be screened from frost. They may be also increased by cuttings, which, taken off in May or June, and planted in a shady border, will in two months put out roots; in moist weather they may be transplanted, and treated as the old plants. The rest, 4, &c, being natives of the East and West Indies, and other hot climates, are tender and will not thrive in the open air in England; their seeds must therefore be sown on a hot-bed in spring; and afterwards, if they are plunged into the tan-bed in the stove, their branches will put out roots, by which they may be propagated in plenty.

ILLEGITIMATE BIRTH, or *Delivery*, in *Law*. See DELIVERY, and ABORTION.

ILLENAS, Los, in *Geography*, a town of the island of Hispaniola; seven miles N. of St. Domingo.

ILLESEAS, a town of Spain, in New Castile, situated about midway in the road from Toledo to Madrid; containing two parishes and three convents; 15 miles S.S.W. of Madrid.

ILLEVIABLE, in *Law*, a debt or duty which cannot, or ought not, to be levied.

The word *nihil* is usually set on a debt, or due, that is illeivable.

ILLIBERIS, in *Ancient Geography*, since called *Helena*, a town of Gaul, at the foot of the Pyrenées, upon the sea-coast towards the east; now *Elne*.

ILLICI, or ILLICE, a town of Spain, in the Tarragonensis, upon the gulf called "Illicitanus Sinus."

ILLICIUM, *ab illiciendo*, in *Botany*, denoting an *enticing* plant, from its being very fragrant and aromatic. Linn. Gen. n. 611. Reich. 746. Schreb. 940. Mant. 167. Ellis in Phil. Transf. for 1770. Gærtn. t. 69. Juss. 280. Class and order, *Polyandria Polygynia*. Nat. Ord. *Coadunatae, Magnoliæ*, Juss.

Gen. Ch. *Cal.* Perianth six-leaved, deciduous, the three inferior leaflets oval; the three superior alternate ones narrower and resembling petals. *Cor.* Petals many (27), disposed in a triple series; the nine inferior obtuse, concave, the nine middle shorter and narrower; the interior nine still shorter and narrower. *Stam.* Filaments very many (30), short, depressed; anthers upright, oblong, obtuse, emarginate. *Pist.* Germens very many (20), disposed in a circle, ending in very short spreading styles; stigmas at the upper side of the style, oblong. *Peric.* Capsules several (commonly eight, Loureir.), ovate, compressed, hard, spreading into a circle, bivalve, (one-valved, L. opening at the upper edge, G.) Seed solitary, ovate, rather compressed, glossy.

Ess. Ch. Calyx six-leaved. Petals 27. Capsules several, disposed in a circle, bivalve, one-seeded.

1. I. *anisatum*, yellow-flowered aniseed-tree. Linn. Sp. 664. Syt. 507. Reich. 2. 624. Gærtn. Fruct. 1. 338. Lour. Cochinch. 353. Thunb. Jap. 235. Berg. Mat. Med. 514. (Zingi fructus stellatus f. Anisum Indicum; Bauh. Hist. 1. 485. Somo vulgo skimmi; Kæmpf. Amœn. 680. t. 881.) "Flowers yellow." This plant is stomachic and carminative, and is used in the Eastern countries in the colic, rheumatism, &c. In China it is used for seasoning

sweet dishes. In Japan they place bundles and garlands of the aniseed-tree in their temples before their idols, and on the tombs of their friends. They also use the powdered bark as incense to their idols.

2. I. *floridanum*, red-flowered aniseed-tree. Linn. Reich. Ellis in Phil. Transf. 1770, vol. 60. p. 524. Gærtn. Fruct. 1. 339. Hortus Kewenf. 2. p. 250. "Flowers red." Native of Florida.

The aniseed-tree may be propagated by seeds, if they can be procured; or by laying down the young branches; or by cuttings which strike freely. It requires the same treatment as *Gardenia*; which see.

ILLIERS, in *Geography*, a town of France, in the department of the Eure and Loire, and chief place of a canton, in the district of Chartres; 12 miles S.W. of Chartres. The place contains 2617 inhabitants, in 9383 cantons, on 232½ kilometres and 20 communes.

ILLIMANI, a mountain of Peru, near La Paz, supposed to contain immense quantities of gold.

ILLINITIONS, in *Geology*, is used by Mr. Kirwan (*Geolog. Essays*, p. 152.) to denote the divided masses of argillaceous iron ore, thought by Buffon and others, without sufficient reason, to owe their origin to decayed vegetables.

ILLINOIS, in *Geography*, a lake of North America, about 20 miles long and five broad in the middle. The inhabitants of the adjacent country are called Illinois Indians. The number of warriors is about 260. N. lat. 40° 35'. W. long. 89° 18'.

ILLINOIS, or *Illini*, a river which rises from the lake Illinois, and runs into the Mississippi, N. lat. 38° 40'. W. long. 92° 12'. The lands on the banks of the Illinois, particularly on the S.E. side, are perhaps as fertile as any part of N. America. They produce, in the most luxuriant plenty, wheat, rye, Indian corn, peas, beans, flax, hemp, tobacco, hops, grapes, apples, pears, peaches, dyeing roots, medicinal plants, &c. Here also are found large forests of hiccory, oak, cedar, mulberry trees, &c. Savannas, or natural meadows, are both numerous and extensive. On the N.W. side of this river are a coal mine, half a mile in extent, and two salt ponds, 100 yards in circumference, and several feet in depth. The Illinois furnishes a communication with lake Michigan, by Chiago river, between which and the Illinois are two portages not exceeding in length four miles. The whole length of the river from the source of Theakiki, which is at a short distance from the river St. Joseph, opposite to fort Joseph on the N., is 480 miles. The Indians have ceded to the United States, by the treaty of Greenville, in 1795, a tract of land 12 miles square, at or near the mouth of the Illinois, and also a tract 6 miles square, near the south end of Illinois lake. This lake is merely a dilatation of the river, and is situated about 240 miles below the source of Theakiki, and 43 below the salt-ponds.

ILLISIO, in *Surgery*, a bruise or contusion.

ILLITERATURE, in *Law*; if an illiterate man be to seal a deed, he is not bound to do it, if none be present to read it, if required: and reading a deed false will make it void. (2 Rep. 3. 11.) A man may plead *non est factum* to a deed read false; as when a release of an annuity was read to an illiterate person, as a release for the arrears only, &c. agreed to be released. (Moore, 148.) If there is a time limited for a person to seal a writing; in such case illiterature shall be no excuse; because he might provide a skilful man to instruct him: but when he is obliged to seal it upon request, &c. there he shall have convenient time to be instructed. 2 Nelson's Abr. 946.

ILLITURGI, in *Geography*, a town of Spain, in Bœtica, situated

situated towards the N.E. upon the Bætis.—Also, a town of Hispania Tarragonensis, on this side of the Ebrus.

ILLOK, a town of Sclavonia, situated on the Danube; 16 miles W. of Peterwaradin. N. lat. $45^{\circ} 23'$. E. long. $18^{\circ} 8'$.

ILLORA, a town of Spain, in the province of Grenada; 16 miles N. of Loja.

ILLOSIS, from *illere*, to turn round, in Surgery, a distortion of the eyes.

ILLUMINATION, in a general sense, denotes the act of a luminous body, or a body that emits light; sometimes, also, the state of an opaque body that receives it.

ILLUMINATION, *Circle of*. See CIRCLE.

ILLUMINATIVE lunar month. See MONTH.

ILLUMINATORS, artists whose province it was, by a kind of miniature painting, to embellish books with ornamented letters and small paintings. The practice is of great antiquity.

ILLUMINED, ILLUMINATI, a Church term, anciently applied to such persons as had received baptism.

This name was occasioned by a ceremony in the baptism of adults: which consisted in putting a lighted taper in the hand of the person baptized, as a symbol of the faith and grace he had received in the sacrament.

ILLUMINED, ILLUMINATI, is also the name of a sect of heretics, who sprang up in Spain about the year 1575, and were called by the Spaniards, *Alambrados*.

Their principal doctrines were, that, by means of a sublime manner of prayer, which they had attained to, they entered into so perfect a state, that they had no occasion for ordinances, sacraments, or good works: and that they could give way, even to the vilest actions, without sin.

The sect of the illumined was revived in France in the year 1634, and were soon after joined by the Guerinets, or disciples of Peter Guerin, who together made but one body, called also illumined: but they were so hotly pursued by Louis XIII. that they were soon destroyed.

The brothers of the Rosy Cross are sometimes also called illumined. See ROSYCRUCIAN.

ILLUSTRIOUS, ILLUSTRIS, was heretofore, in the Roman empire, a title of honour peculiar to people of a certain rank. It was first given to the most distinguished among the knights who had a right to bear the *latus clavus*: afterwards, those were entitled illustrious who held the first rank among those called *honorati*; that is, the *præfecti prætorii*, *præfecti urbis*, *treasurers*, *comites*, &c.

There were, however, different degrees among the illustres: as in Spain, they have *grandees* of the first and second class, so in Rome they had their illustres, whom they called great, *majores*; and others less, called *illustres minores*. For instance, the *præfectus prætorii* was a degree below the master of the offices, though they were both illustres.

The novels of Valentinian distinguish as far as five kinds of illustres, among whom, the *Illustres administratores* bear the first rank.

ILLYRIA, ILLYRICUM, or ILLYRIS, in *Ancient Geography*, a country of Europe, the boundaries of which have not been precisely ascertained. It was wholly contained between the rivers Naro or Narenta and Drilo. Some authors, among whom we may reckon Pliny and Ptolemy, extend the limits of this country so as to include Liburnia and Dalmatia, which see respectively. M. D'Anville has assigned to Illyricum the whole country which lies between Istria and the small river Arfia, as far as the mouth of the Drilo; but he observes, that the Illyric nations extend much farther. The rivers of Illyricum are the Arfia, forming the boundary of Italy, Oeneus, Tedanius, Titius, Naro, and Drinus or Drilo. The mountains form an elevated and

extensive chain, separating Illyricum from Pannonia. Part of this chain bears the name of Albius or Albanus Mons, and considered as a kind of continuation of the Carnic Alps, traverses Illyricum through its whole length from W. to E., as far as mount Scardus in Dardania. The sea coast is covered with a number of islands. It appears from an inscription of Gruter, that Illyricum was divided by Augustus into two provinces, the Superior and Inferior; but the situation of each is left doubtful by ancient historians and geographers. According to Ptolemy, the whole of Illyricum was divided into Liburnia and Dalmatia; and it was bounded on the N. by Pannonia, part of it having Istria on the west; on the E. by Mæsia Superior, and on the S. by Macedonia, and also on the coast by the Adriatic gulf. In the seas that washed the coasts of Liburnia and Dalmatia there were several islands, called the Illyric islands.

ILM, or STADT-ILM, in *Geography*, a town of Germany, in the county of Schwartzburg Rudolstadt, on the Ilm; 14 miles S. of Erfurt. N. lat. $50^{\circ} 46'$. E. long. $11^{\circ} 9'$.

ILMAWAY, a town on the W. coast of the island of Samar. N. lat. $11^{\circ} 39'$. E. long. $124^{\circ} 50'$.

ILMEN, a lake of Russia, in the government of Novogorod, on which stands the ancient city of this name, about 48 miles long, and from 12 to 18 wide.

ILMENAU, a town of Germany, in the county of Henneberg, on the side of the Elbe, near which are some mines of silver and copper; 10 miles E. of Schmalkalden.

ILMINSTER, a market town and parish in the hundred of Abdick, and county of Somerset, England. It contained, in the year 1800, 366 houses, and 2045 inhabitants. This place appears to have been of some note in the time of the Saxons: for Ina, king of the West Saxons, gave the church and manor to the abbey of Michelney, in this county. To this monastery it continued annexed till the dissolution of religious houses in the time of king Henry VIII. This monarch granted it to Edward, earl of Hereford; but on this nobleman's attainder, in 1551, Ilminster reverted to the crown. It was afterwards granted to the Seymour family, and in 1793 belonged to John Hanning, esq. of Barington court. The church is a large handsome edifice, and was made prebendal in the time of king Richard I. Among other monuments it contains, is one to the memory of Nicholas and Dorothy Wadham, the founders of a college in Oxford, bearing their name. In this church were four chantries, respectively dedicated to St. Mary, St. Catharine, the Holy Cross, and St. John the Baptist. The town consists of two principal streets, one of which extends nearly a mile in length; and the other about half a mile. In the year 1491 a fire consumed several houses here. Previous to the Norman conquest this town was privileged with a market. Near the centre of the town is a commodious market-house, or town-hall; also a long range of shambles. The cloth manufacture formerly flourished here to a very great degree; and at present a considerable business prevails in the manufactory of narrow cloths. A free German school was founded here in the year 1550 by Humphrey Walron and Henry Greenfield. Since the first endowment the revenues have been greatly increased by subsequent benefactions. This parish is divided into five tithings, and comprehends eight hamlets. The market is held on Saturdays, and an annual fair is held the last Wednesday in August. Collinson's History, &c. of Somersetshire, vol. i.

ILMOLA, a town of Sweden, in the government of Wafa; 44 miles N.E. of Christianstadt.

ILOCCOS, a province of the island of Luçon.

ILOMANTZ, a town of Sweden, in the government of Kuopio; 90 miles E. of Kuopio.

ILORCIS, in *Ancient Geography*, Lorca, a town of

Hither Spain, towards the west of Carthago Nova, called by Pliny "Monumentum Scipionis."

ILORI, in *Geography*, a town of Mingrelia, on the coast of the Black sea; 14 miles S.E. of Isgaur. N. lat. 43° 8'. E. long. 40° 42'.

ILSBO, a town of Sweden, in the province of Helsingland; 9 miles N. of Hudwickfwall.

ILSLEY, EAST, or *Market Ilsey*, anciently *Huldesty*, or *Hildesty*, is a small market town in the hundred of Compton, Berkshire, England. It is 53 miles distant from London; and was returned to parliament in the year 1801, as containing 114 houses and 512 inhabitants. A weekly market is held on Wednesdays, and it has two fairs annually. But the town is principally noticed for its sheep market, which, next to that of the metropolis, is supposed to be the largest in England. It commences on Wednesday, in Easter week, and continues to be held every alternate Wednesday till Midsummer. This market of late years has become of the first importance; the annual average of sheep sold being upwards of 250,000, comprising lambs, tegs, wethers, and ewes. The principal purchasers are the farmers of Hertfordshire and Buckinghamshire, in which counties they are afterwards fattened for the London market. At Kates-Gore, in the parish of East Ilsey, were large stables, built by William, duke of Cumberland. Lysons's *Magna Britannia*, vol. i.

ILST, or YLST, a town of Holland, in the department of Friesland, defended by a ditch filled with waters by the river Weymer; 12 miles N.E. of Staveren.

ILSTORP, a town of Sweden, in West Gothland; 27 miles S.S.E. of Gotheborg.

ILTEN, a town of the principality of Luneberg; 16 miles S.S.W. of Zelle.

ILTERIB, a town of Syria, in the pachalic of Aleppo; 15 miles N.W. of Aleppo.

ILUA, in *Ancient Geography*, called also *Ætolia*, an island in the Mediterranean, on the coast of Etruria. See ELBA.

ILUCHANO, in *Geography*, a town of Russia, in the government of Upha; 32 miles S.S.E. of Menzelinsk.

ILUCIA, in *Ancient Geography*, a town of Hither Spain, belonging to the Oretani.

ILU-MULU, in *Botany*. See SPINIFEX.

ILUNUM, in *Ancient Geography*, a town of Spain, in the Tarragonensis, belonging to the Ballitani. Ptol.

ILURBIDA, a town of Spain, in the Tarragonensis, in the country of the Carpetani. Ptol.

ILWILTZKOLSTE, in *Geography*, a town of Sweden, in the province of Skonen; 10 miles S. of Christiansfadt.

ILY, in *Botany*. See ARUNDO bambos.

ILYE, in *Geography*, a town of Transilvania, on the river Maros; 32 miles S.S.W. of Weisenburg.

ILZA, a town of Austrian Poland, in the palatinate of Sandomirz; 14 miles S. of Radom.

IMABARI, a town of Japan, on the N. coast of the island of Xicoco. N. lat. 34° 10'. E. long. 134° 20'.

IMAGE, IMAGO, in *Optics*, a natural, lively representation of an object, opposed to a smooth, well-polished surface, or mirror.

The Latin word, *imago*, comes originally from the Greek *μιμνησθαι*, *imitari*, to imitate, or mimic.

IMAGE, taken more largely, denotes the spectre, or appearance, of an object; whether by reflection or refraction.

In all plane mirrors, the image is of the same magnitude as the object; and appears as far behind the mirror, as the object is before it.

In convex mirrors, the image appears less than the object; and farther distant from the centre of the convexity than from the point of reflection.

Mr. Molyneux gives the following rule for finding the diameter of an image, projected in the distinct base of a convex mirror; as the distance of the object from the mirror is to the distance from the image to the glass; so is the diameter of the object to the diameter of the image. See LENS, MIRROR, REFLECTION, and REFRACTION.

IMAGE is also used for the trace, or mark, which outward objects impress on the mind, by means of the organs of sense. See IDEA.

IMAGE also signifies an artificial representation performed by man; as in painting, sculpture, and the like. In which sense the word is now generally used in speaking of things holy, or imagined to be so.

The noble Romans preserved the images of their ancestors with a great deal of care and concern, and had them carried in procession at their funerals and triumphs: these were commonly made of wax, or wood; though sometimes of marble, or brass. They placed them in the vestibules of their houses; and they were to stay there, even if the house happened to be sold, it being accounted impious to displace them. Appius Claudius was the first who brought them into the temples, in the year of Rome 259, and he added inscriptions to them, shewing the origin of the persons represented, and their brave and virtuous achievements.

It was not, however, allowed for all who had the images of their ancestors in their houses, to have them carried at their funerals; this was a thing only granted to such as had honourably discharged themselves of their offices: for those who failed in this respect forfeited that privilege; and in case they had been guilty of any great crime, their images were broken to pieces.

The Jews absolutely condemn all images, and do not so much as suffer any statues or figures in their houses, much less in their synagogues, or places of worship.

The use and adoration of images are things that have been a long time controverted in the world.

It is plain from the practice of the primitive church, recorded by the earlier fathers, that Christians, for the first three centuries after Christ, and the greater part of the fourth, neither worshipped images nor used them in their worship. However, the greater part of the Popish divines maintain, that the use and worship of images were as ancient as the Christian religion itself: to prove this, they allege a decree, said to have been made in a council held by the apostles at Antioch, commanding the faithful, that they may not err about the object of their worship, to make images of Christ and worship them. (Baron. ad an. 102.) But no notice is taken of this decree till 700 years after the apostolic times after the dispute about images had commenced. The first instance that occurs in any credible author of images among Christians, is that recorded by Tertullian de Pudicit. c. 10. of certain cups, or chalices, as Bellarmine pretends, on which was represented the parable of the good shepherd carrying the lost sheep on his shoulders: but this instance only proves, that the church, at that time, did not think emblematical figures unlawful ornaments of cups or chalices. Another instance is taken from Eusebius, Hist. Eccl. lib. vii. cap. 18. who says, that in his time, there were to be seen two brass statues in the city of Paneas, or Cæsarea Philippi; the one of a woman on her knees, with her arms stretched out, the other of a man over-against her, with his hands extended to receive her; these statues were said to be the images of our Saviour, and the woman whom he cured of an issue of blood. From the foot of the statue representing our Saviour, says the historian, sprung up an exotic plant, which, as soon as it grew to touch the border of his garment, was found to cure all sorts of distempers. Eusebius, however, touches

none of these things: nay, he supposes that the woman who erected this statue of our Saviour was a Pagan, and ascribes it to a Pagan custom. Farther, Philostorgius, Eccl. Hist. lib. vii. c. 3. expressly says, that this statue was carefully preserved by the Christians, but that they paid no kind of worship to it, because it is not lawful for Christians to worship brass or any other matter. The primitive Christians abstained from the worship of images, not, as the Papists pretend, from tenderness to heathen idolaters, but because they thought it unlawful in itself to make any images of the Deity. (Justin Mart. Apol. ii. p. 44. Clem. Alex. Strom. 5. Strom. 1. and Protr. p. 46. Aug. de Civit. Dei. lib. vii. c. 5. and lib. iv. c. 32. Id. de Fide et Symp. c. 7. Lactant. lib. ii. c. 3. Tertull. Apol. c. 12. Arnob. lib. vi. p. 202.) Some of the fathers, as Tertullian, Clemens Alexandrinus, and Origen, were of opinion, that, by the second commandment, the arts of painting and engraving were rendered unlawful to a Christian, styling them evil and wicked arts. (Tert. de Idol. cap. 3. Clem. Alex. Admon. ad Gent. p. 41. Orig. contra Celsum, lib. vi. p. 182.) The use of images in churches, as ornaments, was first introduced by some Christians in Spain, in the beginning of the fourth century; but the practice was condemned, as a dangerous innovation, in a council held at Eliberis in 305. Epiphanius, in a letter preserved by Jerome (tom. ii. ep. 6.), bears strong testimony against images, and may be considered as one of the first Iconoclasts. The custom of admitting pictures of saints and martyrs into the churches, for this was the first source of image worship, was rare in the latter end of the fourth century; but became common in the fifth: however, they were still considered only as ornaments; and, even in this view, they met with very considerable opposition. In the following century the custom of thus adorning churches became almost universal, both in the East and West. Petavius expressly says (De Incar. lib. xv. cap. 14.), that no statues were yet allowed in the churches; because they bore too near a resemblance to the idols of the Gentiles. Towards the close of the fourth or beginning of the fifth century, images, which were introduced by way of ornament, and then used as an aid to devotion, began to be actually worshipped. However, it continued to be the doctrine of the church in the sixth and in the beginning of the seventh century, that images were to be used only as helps to devotion, and not as objects of worship. The worship of them was condemned in the strongest terms by pope Gregory the Great; as appears by two letters of his written in 601. From this time, to the beginning of the eighth century, there occurs no single instance of any worship given, or allowed to be given, to images, by any council or assembly of bishops whatever. But they were commonly worshipped by the monks and populace in the beginning of the eighth century; inasmuch, that in the year 726, when Leo published his famous edict, it had already spread into all the provinces subject to the empire. See the history of the opposition to them under **ICONOCLASTS**. See Bower's Hist. of the Popes, vol. iii. p. 202, &c.

The Lutherans condemn the Calvinists for breaking the images in the churches of the Catholics, looking on it as a kind of sacrilege; and yet they condemn the Romanists (who are professed image-worshippers) as idolaters: nor can these last keep pace with the Greeks, who go far beyond them in this point; which has occasioned abundance of disputes among them. See **ICONOCLASTS**.

The Mahometans have a perfect aversion to images; which was what led them to destroy most of the beautiful monu-

ments of antiquity, both sacred and profane, at Constantinople.

The method of casting images, &c. among the Hindoos, is in the usual stile of simplicity, that, with the little variety of tools observed to be in use, has been so frequently remarked of eastern people. The following paragraph from the Hindoo Pantheon is descriptive of this process of Indian metallurgy. "The reason why an exact duplicate of an image is a proof of its not being of Hindoo workmanship, will appear in the description of their mode of casting in metals. First, the artist makes in wax the exact model, in every particular, of his intended subject, be it what it may, whether an image of a deity, or the hinge of a box: over this he plasters a covering of fine clay, well moistened and mixed, leaving an aperture at some part; when dry it is put on a fire, with the hole downwards, and the wax, of course, melts out. The platter is now a mould, and receives at the aperture the molten metal, giving it externally, when cool, the exact form of its own concavity; in other words, of its original waxen model. The plaster or crust, or mould, is now broken off, and the image (say) is produced sometimes sufficiently correct to require no after-polishing. The beautiful specimens of Hindoo mythology cast at Benares, under the superintendance of Mr. Wilkins and some Pandits, have never since received the least polish or filing; but are now seen at the India-house museum, exactly as they made their first appearance from the mould: from these classical subjects several of my plates have been engraved.

"That Hindoo casts have but little muscular expression, is not, perhaps, to be considered altogether as defective, or attributed to want of skill in the artists. The human subject with them is rounder and plumper, less marked by angles and muscles, than the harder and ruder persons of higher latitudes, who, of course, exhibit more "nerve and pith." The models from which Hindoo founders have borrowed their forms, partake more of the roundness of Apollo, than of the muscle of Hercules." Hin. Pan. p. 420.

IMAGE, in *Rhetoric*, also signifies a lively description of any thing in a discourse.

Images, in discourse, are defined, by Longinus, to be, in general, any thoughts proper to produce expressions, and which present a kind of picture to the mind.

But, in the more limited sense, he says, images are such discourses as come from us, when, by a kind of enthusiasm, or an extraordinary emotion of the soul, we seem to see the things whereof we speak, and present them before the eyes of those who hear us.

Images, in rhetoric, have a very different use from what they have among the poets: the end principally proposed in poetry is astonishment and surprize; whereas the thing chiefly aimed at in prose is to paint things naturally, and to shew them clearly. They have this, however, in common, that they both tend to move, each in its kind.

These images, or pictures, are of vast use, to give weight, magnificence, and strength to a discourse. They warm and animate it; and, when managed with art, according to Longinus, seem as it were to tame and subdue the hearer, and put him in the power of the speaker. See **HYPOTYPOSIS**.

IMAGINARY QUANTITIES, or *Impossible Quantities*, in *Algebra*, are certain expressions that arise in various algebraical and trigonometrical operations, to which no value, either rational or irrational, can be assigned, yet being substituted in the equations whence they were deduced, are found to answer the condition of the question. These expressions arise in the extraction of the even roots of a negative quantity, and may be all reduced to one of the forms $a\sqrt{-1}$,

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or $b + a\sqrt{-1}$; a part only of this latter form being imaginary, but this, when taken collectively with the other part, renders the whole expression, like itself, imaginary. Whenever a quantity of this kind arises in the solution of a problem, it indicates that there are some conditions supposed that are impossible, and hence it may be said, that an imaginary expression is a sign of impossibility. Thus, for example, let there be proposed the two equations $x + y = 10$, and $xy = 26$, to find x and y . First, $x = \frac{26}{y}$, therefore $\frac{26}{y} + y = 10$, or $y^2 - 10y = -26$; whence is obtained $y = 5 \pm \sqrt{-1}$, which is an imaginary expression; and hence we conclude, that the two conditions in the problem proposed were inconsistent with each other; that is, the product of no two quantities, whose sum is equal 10, can be equal to 26; or 10 cannot be divided in two parts, such that their product shall be equal to 26. But if we substitute this value of y in the equation $y^2 - 10y = -26$, it will be found to answer the conditions required.

The first notice that is taken of imaginary expressions, or of the square root of negative quantities, is found in Cardan's algebra, who was most probably first led to the consideration of them, from the solutions of those cubic equations, which are now termed irreducible, and in which such expressions always arise, the roots of them being of the form $x = \sqrt[3]{b + a\sqrt{-1}} + \sqrt[3]{b - a\sqrt{-1}}$, each of which parts are imaginary; and thus it is, that some compensation takes place, and the root, though expressed in such terms, that no value can be given to either, is notwithstanding equal to a real quantity; this very singular circumstance, as soon as it was observed by Cardan, no doubt led him to an investigation of this species of quantity, but neither he, nor any other author, has yet been able to unravel the mysteries that these symbols involve, nor has any subject of mathematical enquiry led to more angry disputes: some asserting that such expressions as the mind can form no conception of, or at least of what they are intended to represent, ought not to be introduced into a science, the excellence of which consists in the rigour and evidence of its demonstrations, and that results thus obtained are unworthy of notice. On the other hand, it has been contended, that in all cases where the results thus deduced have been compared with those arising from the strictest geometrical investigations, they have always been found perfectly to agree; and that the symbol $\sqrt{-1}$, although we can form no idea of what it represents, yet that being subjected to the same rules as other analytical symbols, the results derived from its introduction, are equally certain and conclusive: while others, taking a mean between these extremes, admit, that though, from analogy, there is no reason to doubt the truths obtained by means of these imaginary symbols, yet that it always adds a degree of conviction, when the results are verified by a more rigid analysis, and consequently that they ought not to be employed when other means are equally successful. Baron Masères is decidedly of the first of these opinions, on which subject he has a work, entitled "A Dissertation on the Use of the negative Sign in Algebra;" in which is demonstrated the nature of those signs, and the rules that are commonly given for working with them, and where he has also shewn, that equations of the second and third degree may be effected without this introduction, or at least without the consideration of negative roots. Mr. Woodhouse's opinion on this

subject may be seen in his "Analytical Calculations;" and a very ingenious paper on the same head is inserted in the "Philosophical Transactions" for 1778, by professor Playfair of Edinburgh, who has there given us several examples in which these imaginary expressions may be introduced to advantage into trigonometrical and other species of calculation.

Of the Algorithm of Imaginary Quantities.—After what has been said of the various opinions entertained by different able mathematicians on this subject, it will not be surprising to find that the algorithm of these quantities has also been unsettled, such as the rules for multiplication, division, and involution; some authors making the results in these operations different from others, and each assigning reasons for the rules he has given; it will, however, be useless to follow them through their particular arguments, as there are some of them specious, and many of them fallacious; we shall therefore barely state those reasons on which the rules now commonly adopted are founded. It is an established principle in algebra, that $+a \times +a = a^2$, and $-a \times -a = a^2$; and hence, conversely, it follows, that $\sqrt{a^2} = +a$, or $-a$; but this ambiguity has no place, if we know how a^2 was generated, and have occasion to retrace the steps of our operation; that is, we cannot say that $\sqrt{-a \times -a} = \pm a$; nor that $\sqrt{+a \times +a} = \pm a$; but the square root of a^2 , in both these cases, is determined; that is, when considered with regard to its generation it has only one root; whereas, had its origin not been known, we must have given the ambiguous sign to the root a , and for this obvious reason, that we know not when a^2 is unconditionally assumed, whether it be the representative of $(+a)^2$, or $(-a)^2$; these being both expressed by the same symbol a^2 . The restriction of which we have been speaking, sometimes takes place in equations; thus, for example, suppose it were required to find the value of x in the equation $\sqrt{12 + x} = 6 + \sqrt{x}$; we soon find $x = 4$; but there is this limitation, that the square root of x , or of 4, must necessarily be -2 , and not $+2$; as the latter supposition will not answer the conditions of the equation; and the reason is obvious, namely, that we first found $\sqrt{x} = -2$; and then $x = 4$; but now, in re-tracing our steps, we must remember how this 4 was generated, and that it has not two roots, or has not the ambiguous sign belonging to it, as the square root of 4 would have if unconditionally assumed; in fact, the ambiguity in the extraction of the square root arises only in those cases in which we are unacquainted with the generation of the quantity whose root is to be extracted; and here it must necessarily occur, because we have before agreed to represent both $(+a)^2$ and $(-a)^2$ by the same character a^2 .

If therefore it be required to find the product of $\sqrt{-1} \times \sqrt{-1}$, we see immediately that it is equal to $\sqrt{(-1)^2} = \sqrt{1}$; but under this limitation, that the root can only be expressed by -1 , and therefore this product may always be represented by -1 ; or by $-\sqrt{1}$; and it can never have any other form. If the product $\sqrt{-1} \times \sqrt{-1} \times \sqrt{-1}$ were required, this would on the same principles be represented by $-\sqrt{-1}$; and the fourth power of $\sqrt{-1}$ is equal to $+1$; but with this limitation, that the root of this quantity can only be -1 , and not ± 1 ; hence then we have $(\sqrt{-1})^2 = -1$, $(\sqrt{-1})^3 = -\sqrt{-1}$, and $(\sqrt{-1})^4 = 1$, $(\sqrt{-1})^5 = \sqrt{-1}$; and consequently, the 6th power will be the same as the 2d; the 7th the same as the 3d; the 8th the same as the 4th, and so on.

And

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And exactly the converse of these rules must be observed in division. These examples involve all the cases that can arise; for if the quantities to be multiplied or involved be $\sqrt{-a} \times \sqrt{-b}$, we have only to write these, $\sqrt{a} \cdot \sqrt{-1} \times \sqrt{b} \cdot \sqrt{-1} = -\sqrt{ab}$; and $(\sqrt{-a})^2 \times (\sqrt{-b})^2 = ab(\sqrt{-1})^2 = -ab$; this product may be put under a simpler form, $\sqrt{-a^2} \times \sqrt{-b^2} = a\sqrt{-1} \times b\sqrt{-1} = ab(\sqrt{-1})^2 = -ab$: this shews the necessity of always separating the quantities into such factors, that only -1 is found under the radical, for according to the common rules for the multiplication of surds, we should have $\sqrt{-a^2} \times \sqrt{-b^2} = \sqrt{-a^2 \times -b^2} = \sqrt{a^2 b^2} = ab$, which is a false result; but the error is explained from what is observed in the preceding paragraph; for we have no right in this case to assume $\sqrt{a^2 b^2} = ab$, because we know its generation, and that it arose from the product of two negative signs, and therefore its root must necessarily be $-ab$, and not $+ab$.

Having thus established rules for the multiplication, division, and involution of imaginary quantities, we shall give an example, on which a well known trigonometrical formula is deduced from an imaginary expression for the sine and cosine of an angle.

Let a be an arc of a circle, of which the radius is unity, and let c be the number that has unity for its hyperbolic logarithm; then the sine of the arc a , or $\text{fin. } a = \frac{c^a \sqrt{-1} - c^{-a} \sqrt{-1}}{2\sqrt{-1}}$; and $\text{cofin. } a = \frac{c^a \sqrt{-1} + c^{-a} \sqrt{-1}}{2}$, which exponential and imagi-

nary values of the sine and cosine are well known to geometers; and the investigation of them, according to the received arithmetic of impossible quantities, may be as follows. Let $\text{fin. } a = z$, then $a = \frac{z}{\sqrt{(1-z^2)}}$. To bring

this fluxion to such a form that its fluent may be found by logarithms, both numerator and denominator are to be multiplied by $\sqrt{-1}$, then $a = \sqrt{-1} \times \frac{z}{\sqrt{(1-z^2)}}$; and (by form 6 Harm. Men.) $a = \sqrt{-1} \times \log. \frac{z + \sqrt{(z^2-1)}}{\sqrt{-1}}$. Hence $\frac{a}{\sqrt{-1}}$, or $1 \times \frac{a}{\sqrt{-1}} = \log. \frac{z + \sqrt{(z^2-1)}}{\sqrt{-1}}$, and because 1 is the $\log. c$; $c^{\frac{a}{\sqrt{-1}}} = \frac{z + \sqrt{(z^2-1)}}{\sqrt{-1}}$; therefore, if both parts of the frac-

tional index of c be multiplied by $\sqrt{-1}$, $c^a \sqrt{-1} = \frac{z + \sqrt{(z^2-1)}}{\sqrt{-1}}$. Again, if the arc a be considered as negative, its sine becomes also negative, and therefore $-a = \sqrt{-1} \times \log. \frac{-z + \sqrt{(z^2-1)}}{\sqrt{-1}}$; or $-a \sqrt{-1} = -\log. \frac{-z + \sqrt{(z^2-1)}}{\sqrt{-1}}$; and $a \sqrt{-1} = \log. \frac{-z + \sqrt{(z^2-1)}}{\sqrt{-1}}$; whence also, $c^a \sqrt{-1} = \frac{-z + \sqrt{(z^2-1)}}{\sqrt{-1}}$. If from this equation the former be

taken away, there remains $-\frac{2z}{\sqrt{-1}} = c^a \sqrt{-1} - \frac{-z + \sqrt{(z^2-1)}}{\sqrt{-1}}$

$c^{-a} \sqrt{-1}$; whence dividing by $2\sqrt{-1}$, we have $z = \text{fin. } a = \frac{c^a \sqrt{-1} - c^{-a} \sqrt{-1}}{2\sqrt{-1}}$; and by adding together the equations, a value of the cosine may be found in the same imaginary terms which were assigned above. Now by means of these expressions, many theorems may be demonstrated; it may for example be shewn, that if a and b are any two arcs of a circle of which the radius is unity, then

$$\text{fin. } a + \text{cofin. } b = \frac{\text{fin. } a + b}{2} + \frac{\text{fin. } a - b}{2}.$$

For $\text{fin. } a = \frac{c^a \sqrt{-1} - c^{-a} \sqrt{-1}}{2\sqrt{-1}}$; and $\text{cofin. } b = \frac{c^b \sqrt{-1} + c^{-b} \sqrt{-1}}{2}$, therefore $\text{fin. } a + \text{cofin. } b = \frac{c^{a+b} \cdot \sqrt{-1} - c^{-a-b} \cdot \sqrt{-1} + c^{a-b} \cdot \sqrt{-1} + c^{b-a} \cdot \sqrt{-1}}{4\sqrt{-1}} = \frac{\text{fin. } a + b}{2} + \frac{\text{fin. } a - b}{2}$; which is a well known formula,

and it has been deduced by means of the imaginary expressions that we first found, and various other examples of a similar nature might here be given.

This example, with several others, all tending to shew the utility of these imaginary expressions, may be seen in the paper of Mr. Playfair before referred to, after which; and many ingenious remarks on this subject, the professor concludes his paper with the following observation: "Supported on so sure a foundation, the arithmetic of impossible quantities will always be found a useful instrument in the discovery of truth, and may be of service when a more rigid analysis can hardly be applied; for this reason many researches concerning it, which in themselves might be deemed absurd, are yet not destitute of utility: M. Bernoulli has found, for example, that if r be the radius of a circle, the circumference equal $\frac{4 \log. \sqrt{-1}}{\sqrt{-1}} \cdot r$: considered as a quadrature of the circle, this imaginary theorem is wholly insignificant, and would deservedly pass for an abuse of calculation; at the same time we learn from it, that if in any equation the quantity $\frac{\log. \sqrt{-1}}{\sqrt{-1}}$ enters, it may be made to disappear by the substitution of a circular arc."

We have said nothing in the foregoing paragraphs of a paper on the subject of imaginary quantities by M. Buée, published in the Philosophical Transactions for 1806, in which the author endeavours to shew, that imaginary quantities are signs of perpendicularity, a notion peculiar to himself; but there are other parts of the essay that display very considerable ability and ingenuity, but of which our limits will not allow a particular description.

IMAGINARY Roots of an Equation, are those roots, or values of the unknown quantity in an equation, which contain some imaginary expression. Thus the roots of the equation $y^2 - 10y + 26$, are $5 \pm \sqrt{-1}$; and the three roots of the cubic equation $x^3 - 1 = 0$, are $x = \frac{-1 + \sqrt{-3}}{2}$; $\frac{-1 - \sqrt{-3}}{2}$; and 1 : of which the

latter is the only possible value of x , the two former being imaginary or impossible. Sometimes the root of an equation may be represented by imaginary expressions, when it is in fact equal to a real quantity, as is the case in the solution of cubic equations of the irreducible form, according to the method of Cardan. Albert Girard was the first author who treated

treated expressly on the imaginary roots of equations, and shewed that every equation has as many roots, either real or imaginary, as is denoted by the highest power of the index; see his "Inventions Nouvelles en l'Algebra." D'Alembert, in the Memoires of Berlin for 1746, first demonstrated, that every imaginary expression may be reduced to the form $a\sqrt{-1}$, or $b + a\sqrt{-1}$; and that the number of imaginary roots always enter in pairs, and consequently every equation of an odd dimension must have at least one real root, but an equation of an even degree may have all its roots impossible. Waring also, in his "Meditationes Algebraicæ," has treated largely on this head, see chapters 2 and 3 of that work; in which will be found many excellent observations on this subject, with rules for determining the number of imaginary or impossible roots in a given equation of any dimensions.

The rule given by sir I. Newton, in his Universal Arithmetic, for finding the number of impossible roots in an equation is as follows. Constitute a series of fractions, whose denominators are the series of natural numbers 1, 2, 3, 4, 5, &c. continued to the number representing the index or exponent of the highest power of the equation, and their numerators the same series of numbers, in the contrary order; and divide each of those fractions by that next before it, and place the resulting quotients over the intermediate terms of the equation; then under each of the intermediate terms; if its square, when multiplied by the fraction over it, be greater than the terms on each side of it, place the sign +; but if not, the sign -; and under the first and last term place the sign +; then will the equation have as many imaginary roots, as there are changes of the under written signs from + to -, and from - to +. Thus, for the equation $x^3 - 4x^2 + 4x - 6 = 0$, the series of fractions is $\frac{1}{1}, \frac{2}{2}, \frac{3}{3}$; and the second of these, divided by the first, gives $\frac{2}{1}$, or $\frac{1}{2}$; and the third, divided by the second, is also $\frac{1}{2}$; hence these fractions placed over the intermediate terms will stand thus,

$$\left\{ \begin{array}{cccc} & \frac{1}{2} & \frac{3}{3} & \\ x^3 & - 4x^2 & + 4x & - 6 \\ + & + & - & + \end{array} \right.$$

Now, because the square of the second term multiplied by its superscribed fraction is $\frac{16}{3}x^2$, which is greater than $4x^2$, the product of the two adjacent terms, therefore the sign + is set below the second term; and because the square of the third term multiplied by its corresponding fraction is $\frac{16}{3}x^2$, which is less than $24x^2$, the product of the terms on each side of it, therefore the sign - is placed under that term; also the sign + is set under the first and last terms. Hence the two changes of the sign, first from + to - 1, and then again from - to +, indicate that the given equation has two impossible roots.

When two or more of the terms are wanted together, under the place of the first of the different terms write the sign -, under the second the sign +, under the third the sign -, and so on, always varying the signs, except that under the last of the deficient terms, which must always be +, when the adjacent terms on both sides of the deficient terms have contrary signs; as in the equation

$$x^4 + ax^3 + 0x^2 + 0x^2 + 0x + b = 0$$

+ + - + - +

which has four imaginary roots.

This rule, however, may sometimes fail of giving the true number of impossible roots, on account of the roots being more than there can be changes of the sign, but this seldom happens.

This rule is demonstrated by Maclaurin, who has also

given another of his own, which never fails; and the same has also been done by Mr. Campbell. See Philosophical Transactions, vols. 34 and 35.

IMAGINARY Root. See ROOT.

IMAGINATION, as it has been often defined, is a power or faculty of the soul, whereby it conceives and forms ideas of things, by means of impressions made on the fibres of the brain, by sensation. This power depends on the memory. Ideas enter into the mind by the senses; the memory retains them; and the imagination compounds them. Some writers have distinguished two sorts of imagination; the one, which consists in retaining the simple impression of objects, is called the *passive* imagination; the other arranges the images that are received, and combines them in a thousand ways, and is called the *active* imagination. The organs of our senses are composed of fibrillæ, or little fibres, which, at one end, terminate in the outward parts of the body and skin, and at the other in the middle of the brain. These fibres may be moved two ways; either beginning at that end which terminates in the brain, or at that which terminates without. Now the agitation of these fibres cannot be communicated to the brain, but the soul will be affected, and perceive something. If then the agitation begins where objects make their first impression, *viz.* on the external surface of the fibres of our nerves, and is communicated thence to the brain; the soul, in that case, judges that what she perceives is without, that is, she perceives an external object as present; but if only the anterior fibres be moved by the course of the animal spirits, or in some other manner, the soul then imagines, and judges, that what she perceives is not without, but within the brain; that is, she perceives an object as absent; and herein lies the difference between sensation and imagination.

The faculty of imagining, or imagination, only consists, according to the doctrine of Malebranche, in the power which the soul has of forming images of objects, by producing a change in the fibres of that part of the brain, which may be called the principal part, because it corresponds to all the parts of our body, and is the place where the soul (if it may be so said) immediately resides. It matters not which that part is, nor whether the opinion of Willis be true, who places the common sense in the two bodies, called *corpora striata*, and the imagination in the *corpus callosum*; or that of Fernellius, who places sensation in the pia mater that encompasses the substance of the brain; or that of Descartes, who places it in the pineal gland: it suffices that there is some such part.

Since then the imagination only consists in a power which the soul has of forming images of objects, by impressing them on the fibres of the brain, it follows that the larger and more distinct the vestigia or tracks of the animal spirits, which are the lines or strokes, as it were, of those images, are; the more strongly and distinctly the soul imagines those objects. Now as the breadth, depth, and cleanness of the strokes of a sculpture depend on the force wherewith the graver acts, and the obedience which the copper yields, so the depth and cleanness of the tracks of the imagination depend on the force of the animal spirits, and the constitution of the fibres of the brain; and it is that variety which is found in those two things, to which we owe almost all the vast difference which we observe in people's minds. On the one side are abundance and scarcity, briskness and slowness, largeness and smallness, of the animal spirits; and on the other hand, delicacy or grossness, humidity or dryness, stiffness or flexibility of the fibres of the brain; and lastly, a particular relation which the animal spirits may have with those fibres: from the various combinations of which things, will

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will result a sufficiently great variety, to account for all the different characters which appear in the minds of men: and from the same principle flows that difference which is observed in the same person's mind, at different times, and under different circumstances, as in childhood, manhood, and old age, in sickness, health, &c.

It may here be observed, that the fibres of the brain are more agitated by the impression of objects than by the course of the animal spirits; and for this reason the soul is more affected with objects, which it perceives by sensation, and which it looks on as present, and capable of giving it pleasure or pain, than by those perceived by imagination, which it judges to be distant. And yet it sometimes happens, that in persons whose animal spirits are extremely agitated by fasting, waking, drinking, a fever, or some violent passion, these spirits move the inward fibres of the brain as forcibly as inward objects do; so that these persons perceive things by sensation, which they should only perceive by imagination; for imagination and sensation only differ from each other, as the greater from the less. (See Malebranche, *Recher. de la Vérité*, lib. ii. See MADNESS, DELIRIUM, PHRENSY, MELANCHOLY, &c.)

Imagination or fancy, says the ingenious Mr. Harris, though as to its origin it may be subsequent to sense, yet is truly prior to it in dignity and use. It is this which retains the fleeting forms of things, when things themselves are gone, and all sensation is at an end. The difference between sense and imagination appears from hence; that we have an imagination of things that are gone and extinct, which cannot be made the objects of sensation. We have an easy command over the objects of our imagination; whereas our sensations are necessary, when their objects are present. Imagination is also distinguished from memory, as the former views some relic of sensation reposed within us, without thinking of its rise, or referring it to any sensible object, whereas memory views such relic, referring it at the same time to that sensible object, which in time past was its cause and original, and recollection is the road which leads to memory, through a series of ideas, however connected, whether rationally or casually. Besides, imagination may exhibit, after a manner, things that are to come: but memory is confined in the strictest manner to the past. *Hermes*, p. 354, &c. ed. 2d.

Conception is frequently used as synonymous with imagination. Thus Dr. Reid says (*Essays on the Intellectual Powers of Man*, p. 397.) that "imagination, in its most proper sense, signifies a lively conception of objects of sight. This is a talent of importance to poets and orators, and deserves a proper name, on account of its connection with their arts." He adds, that "imagination is distinguished from conception, as a part from a whole." Professor Stewart (in his *Elements of the Philosophy of the Human Mind*, p. 135, 8vo.) distinguishes between conception and imagination. The business of conception, according to this ingenious writer, is to present us with an exact transcript of what we have felt or perceived. But we have, moreover, a power of modifying our conceptions, by combining the parts of different ones together, so as to form new wholes of our own creation. Accordingly he employs the word imagination to express this power, which, in his opinion, is the proper sense of the word; if imagination be the power which gives birth to the productions of the poet and the painter. This is not a simple faculty of the mind. It presupposes abstraction, to separate from each other, qualities and circumstances which have been perceived in conjunction; and also judgment and taste to direct us in forming the combinations. The two powers of conception

and imagination, though distinct, are very nearly allied; and are frequently so blended, that it is difficult to say, to which of the two some particular operations of the mind are to be referred. There are also many general facts which hold equally with respect to both. Logicians in general have maintained, that conception, or imagination, often used as synonymous with it, is attended with no belief of the existence of its object. But this is a principle which professor Stewart has controverted. (See CONCEPTION.) Imagination, according to Dr. Hartley, is the faculty to which we ascribe the recurrence of ideas in a vivid manner, without regard to the order of past impressions. All ideas, he says, are the result either of new impressions, or of association with preceding ideas, though the connection cannot in every instance be immediately traced out. In that state of mind denominated a reverie, a person is more attentive to his own thoughts than to external impressions, and therefore more of his ideas are deducible from association, and fewer from external impressions. And as dreams are the imaginations or reveries of a sleeping man, these are deducible from impressions lately received, from the state of the body, and particularly of the stomach and brain, and also from association. See DREAM.

Every man, says Dr. Reid, is conscious of a succession of thoughts, which pass in his mind while he is awake, even when they are not excited by external objects; and this continued succession of thought has, by modern philosophers, been called the "imagination." It is often denominated the "train of ideas," and is made up of many other operations of mind, as well as conceptions or ideas. Memory, judgment, reasoning, passions, affections, and purposes; in a word, every operation of the mind, excepting those of sense, is exerted occasionally in this train of thought, and has its share as an ingredient; so that we must take the word idea in a very extensive sense, if we make the train of our thoughts to be only a train of ideas. These trains of thought in the mind are of two kinds: they are either such as flow spontaneously, like water from a fountain, without any exertion of a governing principle to arrange them, or they are regulated and directed by an active effort of the mind with some view and intention. These two kinds, however distinct in their nature, are for the most part mixed in persons awake and arrived at years of understanding; and they take their denomination from that which is most prevalent. It is to be observed, however, that a train of thought, which at first was studied and composed, may by habit present itself spontaneously. Those trains of thought that are spontaneous must be the first in the order of nature. When the work of the day is over, and a man lies down to relax his body and mind, he cannot cease from thinking, though he desires it. Something occurs to his fancy; that is followed by another thing; and so his thoughts are carried from one object to another, till sleep closes the scene. In this operation of the mind, it is not one faculty only that is employed. Though memory acts the most considerable part, other powers are exercised and directed to their proper objects. In reveries of this kind we judge and reason, form an opinion of persons and things, and pass sentence accordingly. Such trains of thought may be called historical. Others may be denominated romantic, in which the plot is formed by the creative power of fancy, without any regard to what did or will happen. In these also, the powers of judgment, taste, moral sentiment, as well as the passions and affections, come in and take a share in the execution. Mr. Addison, in the "Spectator," calls this play of the fancy "castle-building." The romantic scenes of fancy are most commonly the occupation of young minds, not

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not yet so deeply engaged in life as to have their thoughts taken up by its real cares and business. In persons come to maturity, there is even in these spontaneous sallies of fancy some arrangement of thought. But how is this arrangement effected? It has all the marks of judgment and reason, yet it seems to go before judgment, and to spring forth spontaneously. It is highly probable, that whatever is regular and rational in a train of thought, which presents itself spontaneously to a man's fancy, without any study, is a copy of what had been before composed, by his own rational powers, or those of some other person. They are the result of habits previously acquired. In order to account for the regular arrangement of those operations of fancy that are in a great degree spontaneous, we need only recur to the natural powers of judgment and invention; the pleasure that always attends the exercise of those powers, the means we have of improving them by imitation of others, and the effect of practice and habits, without supposing any unaccountable attractions of ideas by which they arrange themselves. Besides the original powers which fancy possesses, which are very different in different persons, it has likewise more regular motions, to which it has been trained by a long course of discipline and exercise; and by which it may *extempore*, and without much effort, produce things that have a considerable degree of beauty, regularity, and design. Upon the whole we may observe, that every thing that is regular in that train of thought, which we call fancy or imagination, from the little designs and reveries of children, to the grandest productions of human genius, was originally the offspring of judgment or taste, applied with some effort greater or less. In order to account for this successive train of thought in the mind, a theory, which was suggested by Mr. Hobbs, has been more distinctly explained by Mr. Hume. That author thinks, that the train of thought in the mind is owing to a kind of attraction which ideas have for other ideas that bear certain relations to them. The relations which produce this attraction of ideas, he thinks, are these three only, *viz.* causation, contiguity in time or place, and similitude. These, according to this writer, are the only general principles that unite ideas. Dr. Reid very justly observes, that this enumeration of the relations of things is very inaccurate. Lord Kames, in his "Elements of Criticism," and Dr. Gerard in his "Essay on Genius," have given a much fuller and juster enumeration of the causes that influence our train of thinking. To these works we refer. After all, this attraction of ideas may be resolved into the power of habit. As far as it is in our power to give a direction to our thoughts, which it undoubtedly is in a great degree, they will be directed by the principles common to men, by our appetites, our passions, our affections, our reason, our conscience; and that the trains of thinking in our minds are chiefly governed by these, according as one or another prevails at the time, every man will find in his experience. We shall here subjoin two or three reflections of a more practical nature, and of higher importance. It must be allowed that our happiness or misery in life, that our improvement in any art or science we profess, and that our improvement in real virtue and goodness, depend in a very great degree on the train of thinking that occupies the mind both in our vacant and in our more serious hours. "As far, therefore, as the direction of our thoughts is in our power (and that it is so in a great measure cannot be doubted), it is of the utmost importance to give them that direction which is most subservient to those valuable purposes. The human imagination is an ample theatre, upon which every thing in human life, good or bad, great or mean, laudable or base, is acted. How happy is that

mind in which the light of real knowledge dispels the phantoms of superstition; in which the belief and reverence of a perfect all-governing mind casts out all fear, but the fear of acting wrong; in which serenity and cheerfulness, innocence, humanity, and candour, guard the imagination against the entrance of every unhallowed intruder, and invite more amiable and worthier guests to dwell! There shall the Muses, the Graces, and the Virtues, fix their abode; for every thing that is great and worthy in human conduct must have been conceived in the imagination before it was brought in to act. And many great and good designs have been formed there, which, for want of power and opportunity, have proved abortive. The man, whose mind is occupied by these guests, must be wise; he must be good; and he must be happy." Reid's Essays on the Intellectual Powers of Man, *Ess.* iv.

IMAGINATION, *Pleasures of the*, are referred by Mr. Addison, in the sixth volume of the "Spectator," to three sources, *viz.* beauty, grandeur or *sublimity*, and *novelty*; which see respectively. These pleasures, as the author describes them, are such as arise from visible objects, either when we have them actually in view, or when we call up their ideas into our minds by paintings, statues, descriptions, or any the like occasion. These pleasures are not so gross as those of sense, nor so refined as those of the understanding. They are more conducive to health than those of the understanding, which are wrought out by dint of thinking, and attended with too violent a labour of the brain. Delightful scenes, whether in nature, painting, or poetry, have a kindly influence on the body as well as the mind, and not only serve to clear and brighten the imagination, but are able to disperse grief and melancholy, and to let the animal spirits in pleasing and agreeable motions. The Creator hath wonderfully displayed his benignity by endowing us with the powers of taste and imagination for participating such pleasures; and the additional embellishment and glory, which, for promoting our entertainment, the Author of nature hath poured forth upon his works, is one striking testimony, among many others, of benevolence and goodness. This thought, first suggested by Mr. Addison, Dr. Akenfide, in his "Poem on the Pleasures of the Imagination," has happily pursued:

"————— Not content
With every food of life to nourish man,
By kind illusions of the wandering sense,
Thou mak'st all nature, Beauty to his eye,
Or Music to his ear.——"

IMAGINATION, *Influence of, on the corporeal Frame*. The influence of this faculty of the mind upon the constitution and operations of the body has been the subject of some discussion from very early times. But it is remarkable, that while philosophers and physicians attributed to it a series of phenomena, which a more accurate investigation has shewn to arise from other causes; they at the same time overlooked, or rather ascribed to different sources, many other facts, which subsequent inquiry has proved to originate from the influence of the imagination. The principal operation of this faculty, acknowledged by the older physicians, was that of pregnant women upon the body of the child *in utero*: and this opinion, although it was long ago satisfactorily refuted by some philosophical observers, (see Dr. Blondel's answer to the twelfth chapter of Dr. Turner's treatise on Diseases of the Skin, and *Lettres sur le Pouvoir de l'Imagination des Femmes enceintes*, Paris 1745,) has been maintained by many other writers of reputation, and is still popularly current, if not received as an established truth by the less enlightened part of the medical profession. Nothing, however, we conceive, but the

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the inveteracy of the prejudices of education, can account for the support of a doctrine, which reason, experience, and anatomical science concur to refute. On the other hand, the phenomena actually occasioned by the operation of the imagination on the corporeal functions, are so numerous, and yet at times appear so extraordinary, that they merit a particular investigation: for it is the consequence only of inattention to the subject, and of the general appetite of mankind, especially in ages of ignorance, for whatever is occult and mysterious, that the principle was not long ago established, and the facts rendered familiar to all. Rational science, built upon observation and experiment, has in a great measure banished the notions of magic and witchcraft, even from the peasantry; but it remained for the philosophical minds of a Franklin, a Lavoisier, &c. to propound the mysteries of Mesmer, and the other professors of *animal magnetism*, at Paris, near the close of the eighteenth century;—and for that of a Haygarth, to expose the rationale of *Perkinism* and the *metallic tractors*, in our own country, at the beginning of the nineteenth. (See Rapport des Commissaires chargés par le Roy de l'examen du Magnétisme Animal, Paris 1784;—and a pamphlet, “On the Imagination as a Cause and as a Cure of Disorders of the Body, exemplified by fictitious Tractors and epidemical Convulsions; by John Haygarth, M.D. &c.” Bath, 1800.) In truth, the influence of the faculty of imagination over the functions of the body affords an explanation of numerous facts in the moral as well as physical history of man, which have been accounted for upon various occult principles; such as diabolical or dæmoniacal possession; the power of incantations and amulets; the miraculous influence of relics, images of saints, &c.; the operations ascribed to some magnetic or electrical principle in nature; to the touch of kings, and of various gifted persons; and many other circumstances.

Before we pursue this interesting inquiry, however, we shall dismiss the subject, so far as relates to the supposed operation of the imagination in pregnant women.

I. All the varieties of deformity and monstrosity, as well as of cutaneous marks and blemishes of infants, were formerly ascribed to the imagination of the mother dwelling upon some analogous object, or to her disappointed longings for some particular article of food or drink. Hippocrates himself observes, that the desire of a pregnant woman is capable of marking the tender infant with the thing desired: and subsequently, the observations to this effect, and the number of histories illustrative of it, have been so multiplied by authors of reputation, that the defenders of the doctrine still appeal to experience, as decisive in favour of the ancient and popular opinion; they consider the matter as established upon the evidence of indisputable history. But to those who are acquainted with the records of medicine, it is not necessary to state, that they abound with so many extravagant and fabulous details, which have been collected and repeated with the utmost credulity, that to admit them as truths would require a renunciation of the best principles of modern science. It is enough to peruse the marvellous collections of Schenk and Marcellus Donatus, to be satisfied of this proposition; as to the occurrences themselves; but in respect to the causes of the phenomena, (which is a matter of difficult investigation,) authority is of no weight, when placed in opposition to found anatomical and physiological principles.

The most common deformities, attributed to the influence of the mother's imagination, are spots, tubercles, &c. on the skin, most commonly of a red or purplish colour, which are supposed to resemble different sorts of fruit, such as raspberries, cherries, strawberries, &c. or the stains of port-

wine; and other spots covered with a downy hair, and compared to the skin of a mouse, a mole, &c. These appearances have been commonly ascribed to the disappointed longings of the female, during utero-gestation, for the particular fruit, which is supposed to be impressed on the skin; or to some agitation of mind, occasioned by these things being thrown at her, or certain animals jumping upon her. But many more extraordinary phenomena are on record. Among the cases stated by Turner, we find an instance of an “infant's head pierced quite through by reason of an affright of the mother;” another of a child born with the leg broken or distorted, by the mother looking on a crucifix, and viewing the broken limbs of one of the malefactors by the side of Christ; of a child of sir J. B. which was born wanting one hand, in consequence of his lady being frightened, when pregnant, by the unexpected view of a beggar's stump arm upon her coach door; of another child, which, in consequence of the mother being pursued by her husband with a drawn sword, threatening to cut her over the forehead, near the time of her delivery, was brought forth with a large wound on its forehead, from which a fatal hæmorrhagy took place; and of another infant, whose abdominal viscera hung out all naked below the navel at birth, in consequence of the mother having been compelled to witness the killing of a calf three months before parturition, at the opening of which she felt an extraordinary motion in herself, when she saw how the bowels came tumbling from the belly; not to mention instances of children born with the head of a cat, with a hairy skin and bear's claws, or of different colour from that of the parents, in consequence of frights, or of the frequent contemplation of pictures of bears, or of negroes, &c. See Turner on Diseases of the Skin, chap. xii.

Now, in all these instances, the impressions on the imagination are alleged to have occurred in the course, or even at an advanced period, of the pregnancy. Before this occurrence then, it is presumed that the child *in utero* was of the natural and perfect form; that is, the infant, which is born with a large discolouration or protuberance on its skin, had, up to this period, a fair and smooth skin; that the child who is born with six toes, had, till then, only five; that the child, brought forth with one leg or one arm, had originally two; and the monster produced with the head of a cat, had originally a natural human head, until the mother was frightened by the cat getting into her bed, when she was “big with child” (Turner); and so on, with regard to every other preternatural appearance, whether it be an increase, decrease, or alteration of the parts of the body. It seems almost sufficient barely to state the matter in this light, in order to demonstrate the absurdity of the opinion. For surely it does not require a train of reasoning or of experiment to prove, that neither man nor woman can, by the force of imagination, “add an inch to the stature,” or take an inch from it, or transform any part of their bodies into the resemblance of other animals, or of vegetables and fruit. It is not less clear, that no woman can, by an effort of imagination, form a child; and, if not a whole child, neither can she add new parts to a child already completely formed, nor destroy any of the parts so formed, nor transmute any of those parts into other forms of structure. For example, let us take the instance of the lady, who, when advanced five or six months in her pregnancy, was so terrified by a beggar thrusting the stump of an amputated arm into her coach, that the child, of which she was afterwards delivered, was born with the stump of an arm resembling that of the beggar. Let us consider what an operation must be performed to work this effect: a child at the term of five

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or six months is of considerable bulk, and the arm itself not small. This arm, then, must drop off by the power of imagination; there must be no blood lost to endanger the life of the child; and the wound must be healed before the birth. This might seem sufficiently improbable: but, admitting that the limb could drop off by the force of fancy in the mother, it must still remain in the uterus until the delivery; and the bones at least could not putrify and waste away, although the flesh might. But it never was pretended that, in cases of this nature, any part of the deficient limb was found by the midwife. And, what is a material point in the argument, the stumps of all such imperfect limbs have a smooth and regular skin, which plainly indicates that they were from their first formation of the same figure: for had there been a wound, there would have been a scar; and scars are very distinguishable from sound skin.

When we consider the nature of the connection between the fœtus in utero and the mother, this view of the subject is still farther confirmed. The infant is not one body with the mother, as some writers have asserted, any more than the plant is one substance with the earth, which nourishes it. (See *Lettres sur le Pouvoir de l'Imagination de Femmes enceintes*, Paris, 1745.) There is no communication of nerves whatever between the mother and the child, nor is there any direct vascular communication: the infant has its own distinct circulation of blood, carried on by the action of its own heart and arteries, which last do not terminate in the vessels of the mother, but in the veins of the child, which reconduct the blood to its heart: nor is there any direct communication of the vessels of the mother with those of the fœtus. (See *EMBRYO*.) This identity of the circulation and nervous system of the fœtus renders it altogether inconceivable that the sensations, fears, or desires of the mother should be in any way communicated to it; or that any impression on the imagination of the mother should produce any changes in its structure, or appearance. As it never happens, by any series of fancies or passions, that the figure of the objects of them is traced upon the skin of the mother; so it is equally impossible, and more improbable, that such changes or appearances should be impressed upon the infant, thus insulated from any nervous influence of the parent.

Besides, with respect to the *nævi*, moles, and other marks on the skin, it is obvious to those who have paid any attention to them, that the resemblance which they are said to bear to various sorts of fruit, &c. is purely fanciful; that they are generally of two or three kinds, consisting of a multiplicity, or network, of small blood-vessels, which constitute the common red and purplish marks; or of large brown moles, &c.; and that the fancied occurrence of greater redness in those of the former class, which are compared to fruit, at the time when such fruit is ripe, arises merely from the increased circulation and distention of the small blood-vessels in hot weather. When these and other deformities are connate, the mother, already possessed with the belief that some such cause as could affect the mind must have existed, is not long at a loss; her memory or her prejudice soon furnishes her with some fact, which was never attended to perhaps when it happened, and the instance of her child is added to the long catalogue of those which preceded. For the minute accordance of the fact is never required. Thus there is no defect more common than that of a hare-lip; and when this appears, the mother does not fail to recollect, that at some time in the course of the nine months she had wished for a hare, or had been frightened by a hare, or had by chance seen somebody with a hare-lip, no matter which, the occurrence is satisfactorily ac-

counted for, and the *fact* is established. Yet had not medical observers given this *name* to the disease, the actual resemblance of a human countenance, thus deformed, to that of a hare, would not perhaps readily suggest itself.

But, the truth is, although we cannot explain the causes of these irregularities and monstrosities of human births, any more than various other anomalies and *lusus nature* in the animal and vegetable world in general, yet we must refer them all to the same origin: for in regard to his corporeal frame, his generation, and mechanical structure, man is subject to the same laws with the rest of the living creation. The growth of the human fœtus seems not to differ from the development of the germ, in the eggs of oviparous animals, or in the seeds of plants. All these are liable to every conceivable variety of conformation; to deformities, redundancies, defects, and anomalous dispositions of parts, both internal and external: yet the influence of imagination is, in the latter cases, out of the question. But it would seem, that a nut with two kernels, a chicken with two heads, or a child with a double head, body, and limbs, (a monstrosity not very rare,) are upon a very similar footing: and, that it would be as philosophical to attribute the monstrous chicken to the imagination of the hen that hatched the egg, or the double nut to the fancies of the hazle-buffi, as to ascribe the extraordinary infant to the fears or apprehensions of the mother.

In all the above examples, the changes, supposed to be effected by the imagination on the child in the womb, are said to take place after the development of the germ or embryo has considerably advanced; and it is to such operations only that our attempts at refutation apply. For as to the mysterious influence of the mind in the act of procreation, on which "the *callipædia*, or the art of begetting beautiful children" depends, although much has been said on the subject in all ages, we confess ourselves altogether unable to enter into the discussion. The original conception may doubtless be modified by circumstances, which are incapable of producing subsequent changes in the embryo. If the placing of streaked or pilled rods before the flocks at the time of their conjunction, as mentioned in holy writ, (*Gen. chap. xxx.*) was the occasion of the generation of black and white lambs; the notions of some ancient and modern philosophers and poets may be verified in respect to the human conception. Thus the tyrant Dionysius, who was deformed and ill-favoured himself, in order that he might have a comely issue, is said to have always had a beautiful picture set before his wife in the bed-chamber, that by the force of fancy she might conceive the likeness of it. Galen attributed the same effect to the sight of a picture. (*Lib. de Theriac ad Pison. c. 14.*) And the poet Hesiod exhorts his friends not to set about the work of procreation after they return from funerals, lest the sorrowful idea be transmitted to the conception, and the tender fœtus marked with some frightful character.

Μη δ' ἀπο δυσζήμιου τάφου ἀπονστήσαντα,
Σπερμαίνων γενέτης, ἀλλ' ἀθανάτων ἀπὸ δαυτός.

Hef. Lib. ii. de Op. et Dieb.

Dr. Darwin has many speculations upon this subject; but he refers all the influence to the imagination of the male parent, and denies the influence of that of the female, not only during the period of pregnancy, but at the moment of conception; and he thinks the *callipædia* is an art which may be taught: "but," he properly observes, "the manner of accomplishing this cannot be unfolded with sufficient delicacy for the public eye." See *Zoonomia*, vol. i. sect. xxxix. 6 and 7.

II. Although,

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II. Although, however, we may be convinced of the error of ascribing the actual changes of structure, which constitute the deformities and monstrosities of infants, to the imagination of the mother, operating upon the embryo after it is completely developed; yet we have the most satisfactory evidence of the powerful influence of this faculty over the nervous and vascular system, and of effects resulting from this influence, which might *à priori* be deemed equally extraordinary, as the metamorphoses above-mentioned. Who, for example, could suppose that, on the one hand, many painful, spasmodic, and convulsive affections, both local and general, could be removed by impressions exciting only the imagination of the patient; or, that on the other hand, various anomalous sensations, actual syncope or swooning; and even the most violent epileptic and hysterical convulsions, could be occasioned by influencing the same faculty? We conceive, however, that no fact in physiology is more clearly demonstrated. We shall first state the evidence which experiment has established, and then the inferences which may be deduced, and extended to many other analogous phenomena. The most striking illustration is to be found in the history of

§ 1. *Animal Magnetism*.—In consequence of the extent to which the practice of *animal magnetism*, as it was called by its inventor, M. Mesmer, was carried in Paris, the French king appointed a committee, consisting of four physicians, and five members of the Royal Academy of Sciences, to investigate the matter, in the year 1784. Among the latter were M. M. Bailly, Lavoisier, and Dr. Franklin, who was at that time the American minister at Paris. This agent, which Mesmer pretended to have discovered, he affirmed, was “a fluid universally diffused, and filling all space, being the medium of a reciprocal influence between the celestial bodies, the earth, and living beings;—it insinuated itself into the substance of the nerves, upon which therefore it had a direct operation;—it was capable of being communicated from one body to other bodies, both animated and inanimate, and that at a considerable distance, without the assistance of any intermediate substance;—and it exhibited in the human body some properties analogous to those of the loadstone, especially its two poles. This *animal magnetism*,” he added, “was capable of curing directly all the disorders of the nervous system, and indirectly other maladies; it rendered perfect the operation of medicines; and excited and directed the salutary *crises* of diseases, so that it placed these *crises* in the power of the physician. Moreover, it enabled him to ascertain the state of health of each individual, and to form a correct judgment as to the origin, nature, and progress of the most complicated diseases, &c.” In short, he said, “La Nature offre dans le magnétisme un moyen universel de guerir et de preserver les hommes.” (See Memoire sur la Decouverte du Magnetisme Animal, par M. Mesmer, Doct. en Med. de la Faculté de Vienne, 1779.—Also his *Precis Historique des Faits relatifs aux Mag. An. jusques en Avril, 1781.*) Mons. Deslon, a pupil of Mesmer, also practised *animal magnetism* at Paris, and undertook to demonstrate its existence and properties to the commissioners. He commenced his instructions by reading a memoir, in which he maintained, that “there is but one nature, one disease, and one remedy; and that remedy is *animal magnetism*.”

The first step of the commissioners was to examine the mode and instruments of operation, and the effects of the agent. It was observed that M. Deslon operated upon many individuals at the same time. In the middle of a large room was placed a circular chest of oak, raised about a foot from the floor, which was called the *baquet*: the lid of this chest was pierced with a number of holes, through

which there issued moveable and curved branches of iron. The patients were ranged in several circles round the chest, each at an iron branch, which, by means of its curvature, could be applied directly to the diseased part. A cord, which was passed round their bodies, connected them with one another; and sometimes a second chain of communication was formed by means of the hands, the thumb of each one's left hand being received and pressed between the fore-finger and thumb of the right hand of his neighbour. Moreover, a *piano-forte* was placed in a corner of the room, on which different airs were played; sound being, according to the principles of Mesmer, a conductor of magnetism. The patients, thus ranged in great numbers round the *baquet*, received the magnetic influence at once by all these means of communication; by the branches of iron which transmitted to them the magnetism of the *baquet*; by the cord entwined round the body; by the union of thumbs, which conveyed to each the magnetism of his neighbour; and by the sound of the music, or of an agreeable voice, which diffused the principle through the air. The patients were, besides, directly magnetised, by means of the finger of the magnetiser, and a rod of iron, which he moved about before the face, above or behind the head, and over the diseased parts, always observing the distinction of the magnetic poles, and fixing his countenance upon the individual. But above all, they were magnetised by the application of the hands, and by pressure with the fingers upon the hypochondria, and the abdominal regions; which was often continued for a long time, occasionally for several hours together.

The patients, subjected to this treatment, at length began to present very various appearances in their condition, as the operation proceeded. Some of them were calm and tranquil, and felt nothing; others were affected with coughing and spitting; others again experienced slight pains, partial or universal heats, and considerable perspirations; and others were agitated and tortured with convulsions. These convulsions were extraordinary in their number, severity, and duration. The commissioners saw them, in some instances, continue for three hours, when they were accompanied with expectoration of a viscid phlegm, which was ejected by violent efforts, and sometimes streaked with blood; one young man often brought up blood copiously. The convulsions were characterized by violent involuntary motions of the limbs, and of the whole body, by spasms of the throat, by agitations of the epigastrium and hypochondres, and wandering motions of the eyes, accompanied by piercing shrieks, weeping, immoderate laughter, and hiccup. They were generally preceded or followed by a state of languor and rambling, or a degree of drowsiness and even of coma. The least unexpected noise made the patients start; and it was remarked, that even a change of measure in the air, played upon the *piano-forte*, affected them, so that a more lively movement increased their agitation, and renewed the violence of their convulsions. Nothing can be more surprising, or more inconceivable by those who have not witnessed it, than the spectacle of these convulsions, say the commissioners: all seem to be under the power of the magnetiser; a sign from him, his voice, his look, immediately rouses them from a state even of apparent sopor. In truth, they add, it was impossible not to recognise, in these constant effects, a great power or agency, which held the patients under its dominion, and of which the magnetiser appeared to be the sole depositary. See *Rapport des Commissaires chargés par le Roi, de l'Examen du Magnétisme Animal; à Paris, 1784.*

Such, then, were the phenomena (of the reality of which they could not doubt) produced by the operation of this

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new agent, the nature and origin of which it was the duty of the commissioners to investigate. This convulsive and lethargic state, it may be noticed, was considered as a *crisis*, such as the constitution or the art of medicine is enabled to effect, for the purpose of curing diseases; and for the sake of brevity, we shall adopt the term, to express this occurrence, regardless of the hypothesis which led to its use.

On witnessing the same experiments, frequently repeated, the commissioners remarked, that among the patients who fell into the *crises*, there were always many women, and very few men; that the *crises* were not effected in less than the space of an hour or two; and that as soon as one person was thus taken, the rest were similarly seized in a very short time. But they were unable to obtain any satisfactory results from experiments made upon so many persons at once. They resolved, therefore, to endeavour, by experiments upon individuals, in a more private way, to ascertain the direct effects of the newly discovered agent on the animal economy, in a state of health; which, if the agent existed, could of course be rendered manifest by its effects: and they determined to become themselves the subjects of the first experiments. No inquiry was ever conducted in a more philosophical manner, or terminated in a more complete and unequivocal development of the nature of the subject. Great and extraordinary as the powers of this new agent seemed to be, the phenomena were proved to be referrible solely to the *imagination* of the parties magnetised.

The commissioners submitted to be magnetised together, excluding all strangers, by M. Deslon, once a week, for the space of two hours and a half: they were ranged round the *baquet*, encircled by the cord of communication, with an iron branch from the *baquet* resting upon the left hypochondre of each, and forming from time to time the communication of thumbs: they were magnetised by the fingers or the metallic rod being moved about and presented to different parts of the body, as well as by the pressure of hands on the pit of the stomach and sides of the belly. The most irritable and delicate of the commissioners were magnetised the most frequently, and for the longest time. But none of them experienced any effects or sensations; or at least any that could be ascribed to magnetism. Three of them were valetudinarians, and some of their usual uneasy feelings were excited partly by the fatigue, and partly by the strong pressure made on the stomach. They submitted to the experiment on three days successively: still without any effect. The quiet and silence of the eight commissioners, thus magnetised, without any uneasiness or any new sensation, formed the most perfect contrast with the noise, agitation, and disorder of the public magnetism: here was the magnet without any influence, and the operator despoiled of his power. They were warranted, therefore, in concluding, "that magnetism has no agency in a state of health, or even in a state of slight indisposition."

They resolved, then, to make their next trials of its influence upon persons actually diseased; and seven persons, of the lower class, were magnetised by M. Deslon, in the presence of the commissioners, at Dr. Franklin's house. Two women, the one asthmatic, the other with a swelling on the thigh, and two children, the one six and the other nine years of age, felt nothing, and remained unaffected. One man, with diseased eyes, felt a pain in the ball of one of them, which also discharged tears, when the finger of the magnetiser was brought near it, and moved quickly about for a considerable time: but when the other eye, which was most diseased, was magnetised, he felt nothing. A nervous, hysterical woman, to whom the pressure of the abdomen was painful, and who had a *hernia*, said she felt a pain in the head when the finger

was pointed near the rupture, and that she lost her breath when it was brought opposite the face. When the finger of the magnetiser was repeatedly moved up and down, she experienced some catchings of the muscles of the head and shoulders, like one surprised and afraid. The seventh patient, a man, suffered some effects of the same sort, but much less marked.

Four persons, two ladies and two gentlemen, of good education, and in bad health, were afterwards magnetised. Three of these underwent the operation several times, and felt nothing: but the fourth, a nervous lady, being magnetised during an hour and twenty minutes, generally by the application of the hands, was several times on the point of falling asleep, and felt some degree of agitation and uneasiness. On a subsequent occasion, a large company, assembled at Dr. Franklin's, (who was confined by illness,) were all magnetised, including some patients of M. Deslon, who had accompanied him thither: there were present several Americans, one of whom, an officer, had an intermittent fever; yet no person experienced any effects, except M. Deslon's patients, who felt the same sensations to which they had been accustomed at his public magnetising.

These experiments, then, furnished some important facts. Of fourteen invalids, five experienced some effects from the operation, but nine felt none whatever. All the effects observed in the nervous lady, however, might be occasioned by the irksomeness of the same posture for so long a time, and by her attention being strongly fixed upon her feelings: for it is frequently sufficient to think of these nervous attacks, or to hear them mentioned, in order to reproduce them when they are habitual. The three other instances occurred among persons of the *lower class*: and this circumstance was remarked with surprise by the commissioners; that the only effects, which could be ascribed to magnetism, manifested themselves in the poor and ignorant; while those who were better able to observe and to describe their sensations, felt nothing. At the same time, it was observed, that *children*, although endowed with the peculiar sensibility of their age, likewise experienced no effect. The notion, that these effects might be explained by natural causes, therefore, suggested itself to the commissioners. "If we figure to ourselves," they observe, "a poor ignorant person, suffering from disease, and anxious to be relieved, brought before a large company, partly consisting of physicians, with some degree of preparation and ceremony, and subjected to a novel and mysterious treatment, the wonderful effects of which he is already persuaded that he is about to experience; and if, moreover, it is recollected, that he is paid for his compliance, and supposes that the experimenters will be gratified in being told that he perceived certain operations; we shall have natural causes by which these effects may be explained, or at least very legitimate reasons for doubting that the real cause is magnetism." *Rapport des Commiss. p. 30.*

Since the supposed effects of the *animal magnetism*, then, were not discoverable in those who were incredulous; there was great reason to suspect, that the impressions which were produced, were the result of a previous expectation of the mind, a mere effect of the *imagination*. The commissioners, therefore, now directed their experiments to a new point; namely, to determine how far the imagination could influence the sensations, and whether it could be the source of all the phenomena attributed to magnetism.

The commissioners had recourse now to a M. Jumelin, who magnetised in the same way with M. M. Mesmer and Deslon, except that he made no distinction of the magnetic poles. Eight men and two women were operated on by M. Jumelin; but none of them experienced any effect. At
length

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length a female servant of Dr. Le Roy, who was magnetised in the forehead, but without being touched, said she perceived a sense of heat there. When M. Jumelin moved his hand about, and presented the extremities of his five fingers to her face, she said that she felt as it were a flame moving about: when magnetised at the stomach, she declared that the heat was there; at the back, and the same heat was there: she then affirmed that she was hot all over the body, and suffered a head-ache. Seeing that only one person, out of eleven, had been sensible of the magnetism, the commissioners thought that this person was probably possessed of the most mobile imagination. They therefore tied a bandage over her eyes, and she was magnetised again: but the effects no longer accorded with the parts to which the magnetism was directed! When it was applied successively to the stomach and to the back, the woman only perceived the heat in her head, and a pain in her eyes, and in the left ear! The bandage was removed, and M. Jumelin applied his hands to the hypochondres; she immediately perceived a sense of heat in those parts; and, at the end of a few minutes, said that she was faint, and actually swooned. When she was sufficiently recovered, her eyes were again bandaged; M. Jumelin was then removed to a distance, silence was commanded, and they made the woman believe that she was again magnetised. The effects were now precisely the same, although no one operated, either near her or at a distance: she felt the same heat, particularly in the back and loins, and the same pain in the eyes and ears! At the end of a quarter of an hour, a sign was made to M. Jumelin to magnetise her at the stomach; he did so, but she felt nothing; he magnetised her back, but without effect; in fact the heat of the back and loins gradually ceased, and the pains in the head remained!

Here, then, was demonstrative evidence of the operation of the imagination. When the woman saw what was done, the sensations were placed in the parts magnetised; but when she could no longer see, they were referred to the most distant parts, where no magnetism was directed; and, above all, they were equally felt, when she was not magnetised at all, and not felt when she was magnetised, after a little repose, but unknown to herself. The fainting of a nervous woman, when made the subject of a mysterious experiment, and continued in a posture of restraint for a considerable time, is explicable upon natural causes. This experiment also shewed, that the distinction of poles was purely chimerical. It was repeated the following day upon a man and a woman, with the same results. Sensations, felt when they were not magnetised, could only be the effect of imagination: and it was found only necessary to excite and direct the imagination, by questions, to the parts where the sensations were to be felt, instead of directing the magnetism upon those parts, in order to produce all the effects. A child of five years old was then magnetised; but it felt nothing, except the heat which it had previously contracted in playing.

These experiments were repeated by the commissioners in various ways, upon many different persons, of all classes, and with the same results; differing only according to the difference of susceptibility of the imagination of the individuals. They found effects constantly experienced, when no magnetism was used, and *vice versa*, (when the eyes were covered,) according to the direction of the patient's attention by questions put to him with address. Now this practice could not lead to any error; since it only deceived their imagination. For, in truth, when they were not magnetised, their only answer ought to have been, that they felt nothing.

Some facts, communicated to the commissioners by M. Sigault, an eminent physician at Paris, place the power of the imagination in a strong light. "Having announced," he says, "in a great house, that I was an adept in the art of Mesmer, I produced considerable effects upon a lady who was there. The voice and serious air which I affected, made an impression upon her, which she at first attempted to conceal; but having carried my hand to the region of the heart, I found it palpitating. Her state of oppression indicated also a tightness in the chest, and several other symptoms speedily ensued: the muscles of the face were affected with convulsive twitches, and the eyes rolled; she fell down in a fainting fit, vomited her dinner, and had afterwards several motions from the bowels, and felt herself in a state of incredible weakness and languor. A celebrated artist, who gives lessons in drawing to the children of one of our princes, complained during several days of a severe head-ache, which he mentioned to me when we met accidentally on the Pont-Royal. Having persuaded him that I was initiated in the mysteries of Mesmer, almost immediately, by means of a few gestures, I removed his pain, to his great astonishment." Dr. Sigault justly remarks, that it is probably by such an impression on the mind, that the sight of the dentist removes the tooth-ache, when the patient has gone to him for the purpose of having his tooth drawn. He adds, that being one day in the parlour at a convent, a young lady said to him, "you go to M. Mesmer's, I hear." "Yes," he replied, "and I can magnetise you through the grate;" presenting his finger towards her at the same time. She was alarmed, grew faint, and begged him to desist; and, in fact, her emotion was so great, that had he persisted, he had no doubt that she would have been seized with a fit. Report, note p. 39—41.

But although the commissioners were convinced, by their experiments, that the *imagination* was capable of producing different sensations, of occasioning pain, and a sense of heat, and even actual heat, in all parts of the body; and therefore that it contributed much to the effects, which were ascribed to *animal magnetism*: yet the effects of the latter had been much more considerable, and the derangements of the animal economy, which it excited, much more severe. It was now, therefore, to be ascertained, whether by influencing the imagination, convulsions, or the complete *crisis* witnessed at the public treatment, could be produced. In proof of this point, their experiments were not less conclusive, as the following relation of one or two of them will evince. As M. Deslon acknowledged that the complete success of the experiments would depend upon the subjects of them being endowed with sufficient sensibility, he was requested to select some of his patients, who had already proved their susceptibility of the magnetic influence, upon whom the trials might be made.

According to the principles of the magnetisers, when a tree had been touched by them, and charged with magnetism, every person who stopped near the tree would feel the effects of this agent, and either fall into a swoon or into convulsions. Accordingly in Dr. Franklin's garden at Passy, an apricot tree was selected, which stood sufficiently distant from the others, and was well adapted for retaining the magnetism communicated to it. M. Deslon, having brought thither a young patient of twelve years of age, was shewn the tree, which he magnetised, while the patient remained in the house, under the observation of another person. It was wished that M. Deslon should be absent during the experiment; but he affirmed that it might fail, if he did not direct his looks and his cane towards the tree. The young man was then brought out, with a bandage over his eyes, and successfully

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ſucceſſively led to four trees, which were *not magnetiſed*, and was directed to embrace each during two minutes; M. Deſlon at the ſame time ſtanding at a conſiderable diſtance, and pointing his cane to the tree actually magnetiſed. At the firſt tree, the young patient, on being queſtioned, declared that he ſweated profuſely; he coughed and expectorated, and ſaid that he felt a pain in the head: he was ſtill about twenty-ſeven feet from the magnetiſed tree. At the ſecond tree he found himſelf giddy, with the head-ache as before: he was now thirty feet from the magnetiſed tree. At the third, the giddineſs and head-ache were much increaſed; he ſaid he believed he was approaching the magnetiſed tree; but he was ſtill twenty-eight feet from it. At length, when brought to the fourth tree, *not magnetiſed*, and at the diſtance of twenty-four feet from that which was, the *crifis* came on; the young man fell down in a ſtate of inſenſibility, his limbs became rigid; he was carried to a graſs-plot, where M. Deſlon went to his aſſiſtance, and recovered him.

This experiment, then, was altogether adverſe to the principle of magnetiſm, not negatively, but poſitively and directly. If the patient, ſaid the commiſſioners, had experienced no effect under the tree actually magnetiſed, it might have been ſuppoſed that he was not in a ſtate of ſufficient ſuſceptibility; but he fell into the *crifis* under one which was not magnetiſed; therefore not from any external phyſical cauſe, but ſolely from the influence of the *imagination*. He knew that he was to be carried to the magnetiſed tree; his imagination was roused, and ſucceſſively exalted, until, at the fourth tree, it had riſen to the pitch neceſſary to bring on the *crifis*.

Many other experiments furniſhed the ſame reſults. M. Deſlon was requeſted to ſelect, from among his poor patients, thoſe who had ſhewn the greateſt ſenſibility to the magnetiſm; and he accordingly brought two women to Paſſy. While he was magnetiſing Dr. Franklin and ſeveral perſons in another apartment, the two women were put into ſeparate rooms. Three of the commiſſioners remained with one of the women, the firſt to queſtion her, the ſecond to write, and the third to repreſent M. Deſlon, who (they perſuaded her, after having bandaged her eyes) was brought into the room to magnetiſe her. One of them pretended to ſpeak to M. Deſlon, requeſting him to begin; but *nothing was done*; the commiſſioners remained quiet, only obſerving the woman. In the ſpace of three minutes, ſhe began to feel a nervous ſhivering (*frifſon nerveux*); then ſhe felt in ſucceſſion a pain in the head and in the arms, and a pricking in the hands, ſhe became ſtiff, ſtruck her hands together, got up from her ſeat, and ſtamped with her feet: in a word, the *crifis* was completely characterized. Two of the commiſſioners were in an adjoining room with the other woman, whom they placed by the door, which was ſhut, with her ſight at liberty, and made her believe that M. Deſlon was on the other ſide of the door, magnetiſing her. She had ſcarcely been ſeated a minute before the door when a ſhivering began; in one minute more ſhe had a clattering of the teeth, but yet a general warmth over the body; and, by the end of three minutes, the *crifis* was complete. The breathing became hurried; ſhe ſtretched out her arms behind her back, writhing them ſtrongly, and bending the body forwards; a general tremor of the whole body came on; the clattering of the teeth was ſo loud as to be heard out of the room; and ſhe bit her hand ſo as to leave the marks of her teeth in it.

Now, the commiſſioners obſerve, theſe two women were never touched, not even their pulſe felt. A more clear and demonſtrative proof of the power and agency of the imagination could not have been afforded them. It may be

added, however, that one of theſe women, being ſent to M. Lavoifier's, actually fell into the *crifis* in the antichamber, before ſhe had ſeen either M. Deſlon, or any of the commiſſioners; but ſhe knew that ſhe was to meet them there. While ſhe was alone in the antichamber, a ſhort time afterwards, different perſons went to her who had no connection with magnetiſm, and the convulſive motions began again. They remarked to her that no one magnetiſed her; but ſo much was her imagination excited, that ſhe replied, "If you did nothing to me I ſhould not be in this condition." She knew in fact that ſhe came there for the purpoſe of being the ſubject of experiment, and the approach of any one, or the leaſt noiſe, attracted her attention, recalled the idea of magnetiſm, and produced a freſh acceſſion of convulſions.

It is unneceſſary to carry this detail of facts any farther. No experimental inquiry could have been more ably proteſtated, and no philoſophical truth more clearly developed, than that the mere operation of the imagination is ſufficient to produce all thoſe great and extraordinary changes in the animal economy, which were aſcribed to an hypothetical agent in nature, which was termed magnetiſm. If, indeed, it ſhould be ſtill maintained, that the effects, produced in theſe iſolated experiments, fell ſhort of the phenomena which occurred at the *public* magnetiſings, there is another principle of the human conſtitution, which will fully account for this difference in the degree, independently of other phyſical circumſtances neceſſarily exiſting in the latter mode of treatment; we mean the principle of *imitation*, as it has been termed, of which we ſhall ſay more under its proper head. (See IMITATION.) Independently of the warmth and contamination of the air, in a crowded room, which particularly affects the head and the nervous ſyſtem, and of the influence of muſic in increaſing all emotions, and in addition to the multiplied impreſſions upon the ſight and hearing, as well as thoſe of touch and preſſure, not employed in the private trials, this principle of *imitation*, which heightens all emotions, and augments all tendencies to action, would be ſufficient to explain the difference. It was remarked that when one perſon fell into the *crifis*, the reſt were ſpeedily overcome. In like manner, we ſee a ſort of contagion in all the emotions and impreſſions excited in a crowded aſſembly. Hence the powerful impreſſions made by public ſpectacles, and the enthuſiaſm excited in theatres by generous ſentiments; hence the general ardour which ſpreads at once through an army in the hour of battle; or, on the contrary, the univerſal panic which is propagated with inconceivable rapidity, often from the ſlighteſt cauſes, or from cauſes merely imaginary; and hence alſo the ungovernable fury of mobs. But to trace the principle to a cloſer analogy, all nervous and convulſive diſeaſes are liable to propagate themſelves among thoſe who witneſs them, and thus to become, as it were, epidemic; whence hysterical and epileptical convulſions have prevailed at times in large ſchools, manufactories, and even in religious aſſemblies, in a moſt diſtreſſing manner, and were prevented only by a complete ſeparation of the individuals, or by exciting ſtrong counter-impreſſions on the mind, ſuch as the dread of puniſhment, &c. (See IMITATION.) The greater effects, therefore, produced at the public operations of the magnetiſers, are explicable upon the known principles of the human conſtitution, and ſerve to confirm, rather than to invalidate, the inferences of the preceding investigation.

§ 2. *Metallic Traſtors*.—Complete as the detection of the deluſion of Meſmer, and the other advocates of *animal magnetiſm*, by the commiſſioners of Paris, was, and numerous

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as the facts were, which evinced the efficacy of touching, or even pointing at the body with the fingers, or a rod of iron, &c. in removing as well as in exciting pains and distressing sensations, it could hardly have been expected that another delusion, founded upon the same grounds, could again be disseminated, after the short interval of sixteen or seventeen years, so as to find advocates among philosophical men, and to enrich the author of the contrivance. Such, however, was the fact. We now state it, rather as a matter of record than of information, that, in the year 1798, an American, of the name of *Perkins*, introduced into this country a method of curing diseases, for which he obtained the royal letters patent, by means of two small pieces of metal, denominated *Traitors*. These were applied externally near the part diseased, and moved about, gently touching the surface only; and thus multitudes of painful disorders were removed, some most speedily, and some after repeated applications of the metallic points. Pamphlets were published, announcing the wonderful cures accomplished by this simple remedy; and periodical journals and newspapers teemed with evidence of the curative powers of the *traitors*; inasmuch, that in the course of a few months, they were the subject of general conversation, and scarcely less general use. The religious sect of the Quakers, whose benevolence has been sometimes displayed at the expence of their sagacity, became the avowed and active friends of the *traitors*; and a public establishment, called the "Perkinean Institution," was formed under their auspices, for the purpose of curing the diseases of the poor, without the expence of drugs or medical advice. The transactions of this institution were published in pamphlets, in support of the extraordinary efficacy of these new instruments. In somewhat less than six years Perkins left the country, in possession, as we have been informed on good authority, of upwards of ten thousand pounds, the contributions of British credulity; and now (1811) the *traitors* are almost forgotten.

We by no means intend to impeach the veracity of those who attested the many extraordinary cures performed by the application of the *traitors*; on the contrary, we have no doubt that many of them were actually accomplished, at least temporarily: after what we have already stated, when treating of *animal magnetism*, (such as the sudden cure of the artist's head-ache, on the bridge, by M. Sigault's gestures,) and what we shall proceed to state respecting the effects of *counterfeit* *traitors*, it were impossible not to admit the truth and correctness of the majority of the accounts of the efficacy of *Perkinism*. We must observe, however, that the efficacy was founded on the delusion: and had not the scientific world been at that time in a state of comparative ignorance respecting the principle of which Galvani had recently obtained a glance; had they been in total ignorance of that principle, or possessed of more than that "little knowledge" of it, which "is a dangerous thing," such an imposture would scarcely have gained ground for a day, among those who were acquainted with the proceedings of the French commissioners in the affair of Mesmer. But Perkins associated the idea of the Galvanic principle, or animal electricity, with the operation of his *traitors*, by constructing them of two different metals, which the Italian philosopher had shewn to be necessary to excite the operation of the agent which he had discovered: and the obscurity which hung over this subject, (for the great development of the Galvanic principle by the pile of Volta, and the trough which followed, had not then taken place,) left a new field for hypothesis, and the anomalous character of the facts contributed to induce even philosophers to listen to the relation.

But Dr. Haygarth, a philosopher, to whom his profession and his country are deeply indebted for more important services (see *CONTAGION, FEVER-ward, and HOUSE of Recovery*), suspected the true source of the phenomena, produced by the *traitors*, from the first promulgation of the subject. Recollecting the development of the animal magnetism, he suggested to Dr. Falconer, about the end of the year 1798, when the *traitors* had already obtained a high reputation at Bath, even among persons of rank and understanding, that the nature of the operation of the *traitors* might be correctly ascertained by a pair of *false traitors*, resembling the real ones; and it was resolved to put the matter to the test of experiment in the general hospital of that city. They therefore contrived two *wooden traitors*, of nearly the same shape as the metallic, and painted to resemble them in colour. Five cases were chosen of chronic rheumatism, in the ankle, knee, wrist, and hip: one of the patients had also gouty pains. All the affected joints, except the last, were swelled, and all of them had been ill for several months.

"On the 7th of January, 1799, the *wooden traitors* were employed. All the five patients, except one, assured us that their pain was relieved, and three much benefited by the first application of this remedy. One felt his knee warmer, and he could walk much better, as he shewed us with great satisfaction. One was easier for nine hours, and till he went to bed, when the pain returned. One had a tingling sensation for two hours. The wooden *traitors* were drawn over the skin so as to touch it in the *slightest* manner. Such is the wonderful force of the imagination!

"Next day, January 8th, the true metallic *traitors* of Perkins were employed exactly in like manner, and with similar effects. All the patients were in some measure, but not more relieved by the second application, except one, who received no benefit from the former operation, and who was not a proper subject for the experiment, having no exciting pain, but only stiffness in her ankle. They felt (as they fancied) warmth, but in no greater degree than on the former day." Of the Imagination as a Cause and as a Cure of the Disorders of the Body, exemplified by fictitious *Traitors* and epidemical Convulsions. By John Haygarth, M. D. F.R.S. &c. Bath, 1800.

Such were the first experiments attempted with the view of ascertaining the nature of *Perkinism*! But Dr. Haygarth's pamphlet contained an account of still more decisive trials made in the Bristol infirmary, by Mr. Smith, one of the surgeons to that establishment. This gentleman first operated, with two *lead* *traitors*, on Tuesday, April 19th, on a patient who had been some time in the Infirmary, "with a rheumatic affection of the shoulder, which rendered his arm perfectly useless." In the course of six minutes no other effect followed the application of these pieces of *lead* than a warmth upon the skin: nevertheless the patient informed Mr. Smith, on the following day, that "he had received so much benefit, that it had enabled him to lift his hand from his knee, which he had in vain several times attempted on the Monday evening, as the whole ward witnessed." But although it was thus proved that the patent *traitors* possessed no specific powers independent of simple metals, he thought it advisable to lay aside metallic points, lest the proofs might be deemed less complete. "Two pieces of wood, properly shaped and painted, were next made use of; and in order to add solemnity to the farce, Mr. Barton held in his hand a stop-watch, whilst Mr. Lax minutely the effects produced. In four minutes the man raised his hand several inches, and he had lost also the pain in his shoulder, usually experienced when attempting to lift any thing. He continued to undergo the operation daily,

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and with progressive good effect; for on the 25th he could touch the mantle-piece.

“On the 27th,” Mr. Smith continues, “in the presence of Dr. Lovell and Mr. J. P. Noble, two common iron nails, disguised with sealing-wax, were substituted for the pieces of mahogany before used. In three minutes the same patient ‘felt something moving from his arm to his hand,’ and soon after he touched the Board of Rules, which hung a foot above the fire-place. This patient at length so far recovered, that he could carry coals, &c. and use his arm sufficiently to assist the nurse: yet previous to the use of the spurious tractors, ‘he could no more lift his hand from his knee than if a hundred weight were upon it, or a nail driven through it,’ as he declared in the presence of several gentlemen, whose names I shall have frequent occasion to mention. The fame of this case brought applications in abundance; indeed it must be confessed, that it was more than sufficient to act upon weak minds, and induce a belief that these pieces of wood and iron were endowed with some peculiar virtues.” See Dr. Haygarth’s Pamphlet, p. 8.

Many other equally striking instances of the curative operation of the imagination, when excited by the *sham* tractors, might be quoted from the pamphlet in question; but we shall confine our account to a case, which fell under our own observation. Immediately after the publication of Dr. Haygarth’s exposition, the writer of this article, then a student at Edinburgh, was desirous of being convinced, by personal experience, of the truth of his suggestion. Having procured two pieces of stick, painted both of a leaden colour, himself and a friend operated upon three or four individuals in various painful complaints. A servant girl, afflicted with a most acute head-ache, which she declared had rendered her nights altogether restless for nearly a fortnight, readily submitted to these potent *electrical* instruments, as we called them. We moved them about near the forehead, *never touching her*; and in four minutes she said she felt a sensation of a transient chilliness in the head; in a minute or two more she felt as if cold water was running down the temples, and the pain was somewhat diminished; but in the space of ten minutes she declared that the head-ache was entirely gone. On the following day she came to thank us for the good sleep which she had enjoyed through the night, and then continued free from head-ache: but we understood that in a few days she suffered a slight return of it. In the other cases some relief was afforded, but not so marked as in this; they were, indeed, of an inflammatory nature, and less likely to be speedily cured.

After having perused this abundant evidence of the powers of the imagination, not only in producing various affections of the body, but in removing others which exist, we can have no difficulty in crediting many relations of cures performed by persons supposed to be gifted with extraordinary powers, or employing other pretended agents, all of which may be referred to the same common principle. One of the most singular instances of this kind, both from the number of cures performed, and the rank, learning, and character of the persons who attested them, is to be found in the person of Valentine Greatraks, who flourished in the latter part of the 17th century.

§ 3. *The Cures of Valentine Greatraks, and others.*—The proceedings of this pious and apparently sincere man are very interesting, as affording a history of the power of imagination and confidence over certain disorders of the body. He was the son of an Irish gentleman of good education and property, who died in his childhood. Disgusted with the religious and political contentions of his country in the time of Cromwell, he retired from the world apparently in a state of

melancholy derangement and bad health, which had been nearly terminated fatally. On recovering he became one of the puritans of the day, and after having acted some time as a magistrate, he had “an impulse or strange persuasion” in his mind, which continued to present itself, whether he was in public or in private, sleeping or waking, “that God had given him the blessing of curing the king’s evil.” Accordingly he commenced the practice of touching for this disease about the year 1662, which he continued for three years; at this time the ague became very epidemical, and the same impulse within him suggested, “that there was bestowed upon him the gift of curing the ague,” which he also practised with success, by laying his hands on the patients. At length he found his power extended to epilepsy and paralytic disorders, &c.; but he candidly acknowledges that many were not cured by his touch. Nevertheless the unbounded confidence in his powers, and consequently the facility with which the imagination of the ignorant would be acted upon, must be manifest from the following statement, which he sent to Mr. Boyle. “Great multitudes from divers places resorted to me, so that I could have no time to follow my own occasions, nor enjoy the company of my family and friends: whereupon I set three days in the week apart (from six in the morning till six at night), to lay my hands on all that came, and so continued for some months at home. But the multitudes which came daily were so great, that the neighbouring towns were not able to accommodate them: whereon, for the good of others, I left my home, and went to Youghall, where great multitudes resorted to me, not only of the inhabitants, but also out of England; so that the magistrates of the town told me, that they were afraid that some of the sick people that came out of England might bring the infection into the place: whereon I retired again to my house at Affane, where (as at Youghall) I observed three days, by laying my hands on all that came, whatsoever the diseases were (and many were cured, and many were not); so that my stable, barn, and malt-house were filled with sick people of all diseases almost, &c.” See “A Brief Account of Mr. Valentine Greatraks, and divers of the strange Cures by him lately performed. Written by himself in a Letter addressed to the Hon. Robert Boyle, esq.” London, 1723, p. 32. This pamphlet was published originally in 1666.

We shall not extend this article by quoting the histories of cases certified by several physicians, as well as by divines and philosophers; among whom were the names of Robert Boyle, Dr. Cudworth, Dr. Whichcot, &c. We may remark, that some of the cases of head-ache and rheumatism, resemble most accurately those which were cured by the spurious tractors above-mentioned; and that the hand of Greatraks can only be conceived to have operated in the same way. The influence of the imagination was likewise obvious in several convulsive affections, in the same manner as in the women at Passy, who fell into the *crisis* before the magnetism was applied. Greatraks mentions several poor people that went from England to him, “and amongst the rest, two that had the falling-sickness, who *no sooner saw me, than they fell into their fits immediately*;” and he restored them, he affirms, by putting his hands upon them. (Loc. cit. p. 34.) Nay, he tells us, that even the touch of his *glove* had driven many kinds of pains away (p. 30.), and removed strange fits in women (p. 32.); and that the stroking of his hand or his glove had, in his opinion, and that of other persons present, driven several devils, or evil spirits, out of a woman, one after the other, “every one having been like to choke her (when it came up to her throat), before it went forth.” Now, this whole description contains a pretty accurate

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accurate picture of an ordinary hysterical fit, with its attendant *globus*, terminating with the discharge of flatus. P. 31.

About the same period, a Capuchin friar, whose name was Francisco Bagnone, was famous in Italy for the same gift of healing, by the touch of the hands only; and was attended wherever he went by great multitudes of sick people, upon whom he operated numerous and surprising cures, which were deemed true miracles. So general was the belief in his curative powers, that even a prince of Parma, who had laboured under a febrile disease for the space of six months, was induced to apply to him, and was immediately cured by his voice only. The prince himself, and many others that were present, afterwards bore public testimony to the fact. It appears, however, as might be anticipated, and as Greatraks honestly acknowledges with respect to his own attempts, that great numbers of persons, who applied to the friar with full faith in his powers, were not benefited. A celebrated Venetian physician, Tacchenius, affirms that it was notorious, that many (etiam plurimos) of the sick left his presence as feeble and wretched as when they were admitted: "et ita abiisse, ut admitti erant, miseros atque imbecilles, et vidi ipse et vulgo constat." It is curious to observe, how the same discussions and the same arguments are repeated in different ages, when the same subject is agitated. Tacchenius says, that many persons, especially of the higher classes, ascribed the whole of the affair to the imagination: but to this it was replied, that children, wrapped in their swaddling clothes, were cured through the faith of their parents. Nevertheless, he says, he saw some children brought to the monk several times, who were carried home as sickly as they went. Yet he confesses himself unable to make up his opinion respecting so occult a matter, which is maintained and disputed by so many people. It will be recollected, that the friends of Perkins maintained, in answer to Dr. Haygarth's observations, that sheep and horses had been cured by the metallic tractors, and therefore the influence of imagination was out of the question.

Pechlin, a celebrated Danish physician, to whom the above stated facts were communicated, and who referred them exclusively to the imagination, mentions another person, of the name of Marcus Avianus, a man of austere manners, and bearing a high reputation for sanctity, who obtained a great fame, with a certain class of credulous people, for the cure of diseases in this way. It is certain, however, he adds, that all his efforts were not equally successful; and many, who were apparently cured, speedily relapsed. See Jo. Nic. Pechlini Observ. Physico-Medic. lib. iii. Obs. xxxvii.

But it is unnecessary to enumerate the individuals, the De Mainaducis, the Prescotts, &c. who have at different times been distinguished by the possession of various occult methods of healing the sick. The practice has occasionally prevailed in almost all ages; and we have seen, in the detail of experiments above related, that the faculty of the imagination, in certain habits and conditions of the body, and especially in the irritable female constitution, is actually capable of producing all those effects on the corporeal frame, which have been deemed the result of occult agency and extraordinary powers.

§ 4. *Effects of Magic, Incantations, Amulets, Holy Relics, &c.*—Admitting this, then, as an established principle of the human constitution, and making due allowances for the exaggerations and misrepresentations of ignorance and superstition, we are enabled to give a rational explanation of many historical relations, which have been considered as altogether fabulous, or as direct violations of truth. We are well

aware of the facility with which the imagination is excited in an uninformed person, and more particularly in an age of profound ignorance, which is, for that reason, commonly an age of superstition. We know, too, that in the middle ages, when every form of science was almost unknown, and the laws of nature had not been investigated, the smallest discovery in natural philosophy, chemistry, or astronomy, was deemed the result of supernatural communication with the world of spirits; and the discoverer or possessor of the knowledge was looked upon as a being gifted with supernatural powers. In such a state of the human mind, when natural philosophy, meagre as it was, was disguised with the name, and clothed with all the supposed agencies of *magic*; and when every person, with a little more knowledge than his neighbours, was master of so many *magnets*, so many *tractors*, by which he could rule the imaginations of the multitude; it cannot be the subject of our wonder, that the magician's rod (or the philosopher's cane) should produce such mighty operations, or that a scrap of his writing should be a remedy for many maladies. These only executed what was afterwards performed by M. Deslon's extended fingers, and Valentine Greatraks' glove! The effects, then, of the *incantations*, *amulets*, and all the arts of magic, witchcraft, and astrology, by which the more artful pretenders to superior knowledge imposed upon the people, may be allowed to have actually occurred, and to have been the result of natural causes; and they are plainly referrible to one common source, with those of animal magnetism, Perkinism, and various other modifications of the imagination in fetters.

It is scarcely necessary to add, that, during the same periods of ignorance and superstition, those extremely pious and comparatively learned persons, who have been enrolled in the catalogue of saints, must necessarily have obtained the most complete veneration and confidence from the multitude; and hence, after their death, every relic of their bodies or clothing, the shrines in which they were entombed, fragments of the instruments of their execution (in the cases of martyrdom), and every other object that could excite, by association, those reverential feelings, usually called up by a contemplation of their character, would become so many agents upon the imagination, by which all the extraordinary changes in the animal economy above described might be effectually produced. Thus we cannot doubt that there is much foundation for the histories of recovery from various diseases, occasioned by removing the sick to the tombs of celebrated worthies, or placing them before the statues and images of these persons, or by touching them with nails taken from the coffins, or rings from the fingers, or the bones of the fingers themselves of these saints, or by the influence of an infinity of relics of this sort, which cannot be supposed to possess less power over a superstitious mind, than the painted *tractors* of a surgeon, or the glove of an enthusiast.

§ 5. *Influence of the Imagination in Aid of Medicine.*—Since it is obvious, then, that the imagination is capable of producing very important changes in the nervous and vascular systems, independently of the operation of medicine; the physician will infer, that this faculty may be employed as a powerful adjuvant in his hands, and that, by a combination of the most active remedies of both body and mind, he may extend the usefulness of his art to the utmost bounds. A very able physician, Dr. Lind of Haflar, long ago deduced this inference from an interesting occurrence at Breda, related by Vander Mye. "An important lesson in physic," he says, "is here to be learned, namely, the wonderful and powerful influence of the passions of the mind upon the state

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and disorders of the body: This is too often overlooked in the cure of diseases; many of which are sometimes attempted by the sole mechanical operation of drugs, without calling into assistance the strong powers of imagination, or the concurring influences of the soul. Hence it is, that the same remedy will not produce the like effect, even in the same person, when given by different hands." (See Lind's Treatise on Scurvy.) The history given by Vander Mye is strongly illustrative of the subject before us.

During the siege of Breda, in 1625, the garrison was afflicted with the scurvy in a most dreadful degree. "When the prince of Orange heard of their distress," says this physician, "and understood that the city was in danger of being delivered up to the enemy by the soldiers; he wrote letters addressed to the men, promising them the most speedy relief. These were accompanied with medicines against the scurvy, said to be of great price, but of still greater efficacy: many more were yet to be sent them. The effects of this deceit were truly astonishing! Three small phials of medicine were given to each physician, not enough for the recovery of two patients. It was publicly given out, that three or four drops were sufficient to impart a healing virtue to a gallon of liquor. We now displayed our wonder-working balsams; nor were even the commanders let into the secret of the cheat put upon the soldiers. They flocked in crowds about us, every one soliciting that part may be reserved for their use. Cheerfulness again appears on every countenance, and an universal faith prevails in the sovereign virtues of the remedies. The herbs now beginning to spring up above the ground, of these we make decoctions, to which wormwood and camphor were added, that by the prevalent flavour of these, they might appear medicines of no mean efficacy. The stiff contracted limbs were anointed with wax, melted in rapeseed or linseed oil. The invention of new and untried physic is boasted; and amidst a defect of every necessary and useful medicine, a strange medley of drugs was compounded. The effect, however, of the delusion was really astonishing; for many were quickly and perfectly recovered. Such as had not moved their limbs for a month before, were seen walking the streets sound, straight, and whole. They boasted of their cure by the prince's remedy: the motion of their joints being restored by a simple friction with oil, and the belly now of itself well performing its office, or at least with a small assistance from medicine. Many who declared they had been rendered worse by all former remedies, recovered in a few days to their inexpressible joy, and the no less general surprise by taking (almost by having brought to them) what we affirmed to them to be their gracious prince's cure." Lind's loc. cit. and Fred. Vander Mye, de morbis et symptomatibus popularibus Bredanis, tempore obsidionis.

Another rule of medical practice is to be deduced, Dr. Haygarth observes, from the facts which were ascertained from the experiments with the fictitious tractors. "A patient ought always to be inspired in the best manner possible, with confidence in any remedy which is administered: but if a favourable opinion of it cannot be obtained, and especially if there be a marked prejudice against it, another (though a less powerful) medicine ought to be preferred." Haygarth, loc. cit. p. 28.

The preceding statements illustrate also the great advantages of medical reputation, in consequence of the faith of the sick in the medicines prescribed by those who are possessed of it. This explains what has been frequently observed, that the same remedy will produce more beneficial effects, when prescribed by a famous physician, or an assenting empiric, than when taken from the hands of a per-

son of less character and notoriety. Magnificent and unqualified promises, in the latter case, inspire weak minds with implicit confidence. "Omne ignotum pro magnifico." Upon this principle we may account for the marvellous recoveries frequently ascribed to empirical remedies, which are often inert drugs, and generally applied by the ignorant patient in disorders totally different from what the quack himself pretends that he can cure. Hence also it may be observed, that new medicines, even when their composition is known, if recommended to the public with exalted praise, have sometimes been attended with great success, much greater than future experience confirmed. From the same views it is apparent, why reputation, however absurdly obtained, will contribute to enable certain persons to cure some diseases. Thus kings, old women, and seventh sons, who have had medical diplomas assigned to them by common consent for many ages, have probably sometimes worked cures. Nevertheless we have seen, that there were other attractions to the presence of kings, besides the royal touch, when that was in vogue; and the angel was perhaps the best ingredient in the remedy. See EVIL, King's.

After all that has been said, some persons may nevertheless be sceptical as to the power of the imagination over the corporeal organs, illustrated in this article, and think it impossible that such great physical changes can be produced by a mere mental affection. How, they will ask, can any operation of mind at once modify the actions of vessels, nerves, and muscles, over which the will has no controul? Nothing is more mysterious or inscrutable than the operations of the mind upon the body; so that the proximate cause of the motion of the muscles of any organ, by a thought, a volition of the mind, is altogether incomprehensible. The only answer, therefore, that can be given to this question, consists in shewing that analogous effects of the operation of the mind in regard to organs not subject to the will are frequent in the animal economy.

We have a familiar example of the instantaneous change in the action of blood-vessels, occasioned by an affection of the mind in the act of blushing, in which the cutaneous vessels of the face are immediately distended with blood, from the feeling of shame: and a still greater distention of vessels occurs in some other organs of the body, as the immediate consequence of certain passions. On the contrary, other mental emotions, such as fear and terror, as speedily diminish the action of the blood-vessels; whence the sudden paleness which overspreads the person under such emotions; nay, when these are violent, the whole system of circulation, heart and arteries together, is often instantaneously suspended in its motions; if this suspension be merely temporary, as is usual, *syncope* or *fainting* only occurs; if it be permanent, which has sometimes happened, death ensues. In delicate and irritable habits, and therefore especially in the female sex, very slight affections of the mind will produce *convulsions*, and all the other effects which were exhibited in the *crises* of animal magnetism. *Hysterical* paroxysms are thus frequently produced by the mimic pathos of a theatrical scene; by the slightest emotions of alarm and apprehension, and even by joy; and they often ensue after a continued attention to some interesting object. Even the convulsions of *epilepsy* have been excited by the mere sight of a person afflicted by them. (See IMITATION.) In fact, the mind has an extensive influence over spasmodic and convulsive diseases, which depend chiefly upon the unusual mobility of the nervous system, from the slight convulsion of *hiccup* to the most violent hysterical fit: and as the motions of the heart and arteries are closely connected with the state of the brain and nerves, through the same medium the force, rapi-

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dity, and regularity of the circulation may be variously affected. It would seem, indeed, that by a continued direction of the *attention* to particular parts of the body, combined with a belief in the efficacy of a supposed remedy applied to them, the action of particular portions of the circulating system may be considerably modified. For not only has this effect arisen from the external employment of the *traçtors*; but even the internal organs, *e. g.* the stomach and bowels, have been acted upon by medicines of supposed efficacy which had been swallowed. There are instances on record of *bread pills* operating as purgatives, when administered with the assurance that they would produce that effect: and it is well known, that not only the sight of a person in the act of vomiting, but even the thought or recollection of it, has produced the inverted action of the fibres of the stomach, and vomiting itself. Turner mentions a young gentleman who was a patient of his, and who having taken several drastic emetics, became so disgusted, that he could vomit by the force of imagination as effectually as from the most active medicine. The sight of a bolus produced this effect immediately, again and again, whenever it was produced. "Nay, so great and admirable," says Turner, "is the idiosyncrasy of this gentleman, that if at meals or in company, though never so well before, other persons talked but of a bolus, or himself casually thought upon the same, it was odds if he was not forced to rise from table and fall a vomiting." Turner on Diseases of the Skin, chap. xii. See also Pechlin. Obs. Med. Phys. the third book of which relates chiefly to the influence of the mind on the body; and Whytt on Nervous Disorders, chap. v. sect. 6.

On the whole, then, there is ample evidence of the influence of the mind over the actions of the nervous and muscular parts of the body, which are not under the subjection of the will; and therefore we have the concurring proofs, both from analogy and direct experiment, in favour of referring all the phenomena comprehended in this article, to one and the same principle. See also IMITATION.

IMAGINATION, in *Music*, was too much fettered during the seventeenth century by canon, fugue, and ecclesiastical modes, to attempt the use of her wings. In the perusal of the music of the times, we collected fragments of the infant lisp in the vocal language, which has been since so highly polished; but neither found in the subjects of fugue, or vocal divisions, any thing like invention or grace, till after the time of Carissimi and Stradella, who seem to have been the first gifted musicians in Italy.

In England, crowded and elaborate as is the harmony, and uncouth and antiquated the melody in the collection of the best compositions of the time, in queen Elizabeth's virginal book, there is a manifest superiority in those of Bird over all the rest, both in texture and design. In a later age his genius would have expanded in works of invention, taste, and elegance; but, at the period in which he flourished, nothing seems to have been thought necessary for keyed-instruments, except variations to old tunes, in which all the harmony was crowded, which the fingers could grasp, and all the rapid divisions of the times, which they could execute. Even nominal fancies were without fancy, and confined to the repetition of a few dry and unmeaning notes in fugue, or imitation. Invention was so young and feeble, as to be unable to go alone; and old chants of the church, or tunes of the street, were its leading-strings and guides.

IMAGINIFER, among the Romans, an ensign-bearer, who carried the standard on which was represented the image of the reigning emperor. See SIGNA.

IMAGLIN, in *Geography*, a small island in the Straits, between the western coast of America, and the east point of Russia. N. lat. 65° 40'. E. long. 189° 44'.

IMAGO, in *Natural History*, is a name given by Linnaeus to the third state of insects, when they appear in their proper shape and colours, and under no more transformation.

IMALGAN, in *Geography*, a small island in the sea of Mindoro. N. lat. 10° 51'. E. long. 121° 5'.

IMAM, or IMAN, a minister in the Mahometan church, answering to a parish priest among us.

The word properly signifies what we call a prelate, *antistes*, one who presides over others; but the Mussulmen frequently apply it to a person who has the care and intendency of a mosque, who is always there at first, and reads prayers to the people, which they repeat after him.

IMAM is also applied, by way of excellence, to the four chiefs or founders of the four principal sects in the Mahometan religion.

Thus Ali is the imam of the Persian, or of the sect of the Schiites; Abu-beker the imam of the Sunnites, which is the sect followed by the Turks; Saphii, or Safi-y, the imam of another sect, &c.

The Mahometans do not agree among themselves about this *imamate*, or dignity of the imam. Some think it of divine right, and attached to a single family, as the pontificate of Aaron. Others hold, that it is, indeed, of divine right, but deny it to be so attached to any single family, as that it may not be transferred to another. They add, that the imam is to be clear of all gross sins; and that otherwise he may be deposed, and his dignity may be conferred on another. However this be, it is certain, that after an imam has once been owned as such by the Mussulmen, he who denies that his authority comes immediately from God, is accounted impious; he who does not obey him, is a rebel; and he who pretends to contradict what he says, is esteemed a fool, among the orthodox of that religion. The imams have no outward mark of distinction; their habit is the same with that of the Turks in common, except that the turban is a little larger, and folded somewhat differently.

IMAM of Sana. See SANA and YEMEN.

IMAMIA, a name given to that sect of the Mahometans, to which the Persians adhere. See IMAN.

IMAMZADE, in *Geography*, a town of Persia, in the province of Farsistan; 20 miles S. of Darabgherd.

IMAMZADE-Kasim, a town of Persia, in the province of Irak; 30 miles S.W. of Ghulpaigan.

IMANDRA, a considerable lake of Russian Lapland.

IMAUUS, in *Ancient Geography*, part of a long chain of mountains, which traversed Independent and Russian Tartary, with the extent and direction of which the ancients were very imperfectly acquainted. According to them, this chain divided Scythia into two parts, *viz.* Scythia intra Imaum, and Scythia extra Imaum. Ptolemy not only describes an Imaus as running N. and S., which is the Belur-Tag of the Russians and Tartars, with its ridges to the W., now called Argun, Ak-tau, &c.; but another Imaus passing E. and W. to the N. of Hindooistan. As the Northern Imaus of Ptolemy is clearly the Belur-Tag, so his Southern Imaus may be safely regarded, says Pinkerton, as the Himmaleh of the Hindoos; which we may allow to have been known to the ancients, who were no strangers to the rich Gangetic regions of Hindooistan. Nor was it absurd to consider the Himmaleh as a S.E. prolongation of the Northern Imaus. See HIMMALEH.

IMBA, in *Geography*, a town of Japan, in the island of Nippon; 70 miles E. of Jedo.

IMBANKING. See BANKING.

IMBARGO, or EMBARGO, a stop or stay put upon ships, or merchandize, usually by public authority. See EMBARGO.

IMBATTLED. See EMBATTLED.

IMBECILITY, a state of languor and decay; wherein the body is not able to perform its usual exercises or functions.

IMBER, in *Ornithology*. See COLYMBUS *Immer*.

IMBEZLE, or IMBEZZLE, is probably from the old English word to waste, pilfer, or purloin.

As where a person intrusted with goods, wastes, consumes, and diminishes them, he is said to imbezzle them. Persons that imbezzle, or illegally dispose of any woollen, linen, fustian, cotton, or iron materials; or gloves, leather, shoes, &c. with which they are entrusted for manufacture, shall forfeit double the value, or be sent to the house of correction, and there whipped, and kept to hard labour fourteen days: and for the second offence, forfeit four times the value, &c. Buyers and receivers are liable to the same penalties, 13 Geo. II. c. 8.

If any fervant imbezles, purloins, or makes away his master's goods, to forty shillings value, it is made felony without benefit of clergy, 12 Ann. c. 7. Imbezling the king's armour, or stores, is felony by 31 Eliz. c. 4.; other inferior imbezlements and misdemeanours of the same kind are punished with fine, corporal punishment, and imprisonment, by 9 & 10 Will. III. c. 41. 1 Geo. I. c. 25. 9 Geo. I. c. 8. and 17 Geo. II. c. 50. The usual method of proceeding against high officers who imbezle the public moneys is by impeachment in parliament. At common law the offender is subject to a discretionary fine and imprisonment. Imbezling, or vacating records, is a felonious offence against public justice, 8 Hen. VI. c. 12.

IMBIBE, is commonly used in the same sense as *absorb*, viz. where a dry porous body takes up another that is moist.

IMBLOCATION, in *Middle Age Writers*, a particular method of disposing of the dead bodies of excommunicated persons, by raising over them a heap of stones, or earth. This was done in the fields, or near highways; it being unlawful to bury them in holy ground, or even to inter them at all. See BURIAL.

The word is derived from *bloc*, tumulus.

IMBRA CHRISTOS, in *Geography*, a town of Abyssinia; 145 miles S.E. of Gondar.

IMBRICARIA, in *Botany*, was so named by Dr. Smith in his paper on the "Botanical Characters of some Plants of the Natural Order of *Myrti*." Linn. Soc. Transf. v. 3. 257. This is the *Jungia* of Gærtner, but Linnæus in his Supplementum Plantarum having already dedicated a plant, of a very different genus, to the memory of Jungius, it became necessary to give this of Gærtner another denomination. Professor Gmelin called it *Mollia*, but as that was of uncertain derivation it was purposely changed. "In preference; therefore, to *Mollia* (says Dr. Smith), this genus is called *Imbricaria* in allusion to its imbricated foliage. A farther reason for my choice of this name is to abolish the *Imbricaria* of Gmelin, taken up by him from Jusſieu, which I know from original specimens to be the identical *Mimusops Kauki* of Linnæus, of which Jusſieu, after Commerſon's Manuscripts, made a distinct genus on account of its fruit having eight cells, and as many seeds; but Commerſon observed that four or more of these were often abortive; and on the other hand Rumphius tells us

the *Mimusops* has often as many as three or four perfect seeds. It is probable, therefore, that the germen has eight cells and eight seeds, most of which are generally abortive; a striking instance of the necessity of studying that part in all its states."

Gen. Ch. *Cal.* Perianth superior, in five segments. *Cor.* of five petals. *Stam.* Filaments five. *Pist.* Germen of two cells, one of which is frequently abortive; style solitary; stigma globose. *Peric.* Capsule inferior, crowned with the rounded teeth of the calyx, coriaceous, smooth, ovate, somewhat compressed. *Recept.* none. *Seeds* from four to eight, small, ovate, brown.

Ess. Ch. Petals five. Stigma capitate. Capsule covered by the calyx, of two cells and many seeds.

1. *I. crenulata*. Linn. Soc. Transf. v. 3. 259. (*Jungia imbricata*; Gærtner.) "Leaves obovate-wedge shaped, crenulated towards the top. Petals and calyx toothed." A native of Port Jackson, New South Wales.—*Stem* about a foot high, tough and wiry, thickly imbricated with smooth, shining, carinated leaves. *Flowers* lateral. Whole plant smooth.

2. *I. ciliata*. Linn. Soc. Transf. v. 3. 259. "Leaves triangularly-linear. Calyx fringed. Germen five-sided." A native also of New South Wales.—*Stem* branched, thickly imbricated with minute, shining leaves, among which the flowers seem imbedded.

These are the only species known; but it has been suggested that the *Jungia tenella* of Gærtner might be added to this genus. This last mentioned author suspected the *Efcallonia* of Linn. Suppl. to be the same as his *Jungia*, but these genera differ essentially in the latter having a capsule instead of a berry, not to mention other particulars.

IMBRICATED is used, by some botanists, to express the figure of the leaves of some plants, which are hollowed like an *imbrex*, or gutter-tile, or are laid in close series over one another like the tiles of a house.

IMBRICATED *Cup*, *imbricatus calyx*, a term used by authors to express the cups of some of the plants which have compound flowers; in which the common perianthium, surrounding the whole cluster of flowers, is composed of several series of squamæ, the exterior of which is short, and the interior longer, but in great part hid under these upper ones.

IMBRICATED *Shell*, *imbricata concha*, in *Natural History*, a term used in general to express any species of shell-fish, whose shells are elevated into transverse ridges, lying over one another at the base, in the manner of the tiles on a house-top. It has also been used as the name of a peculiar species of shell: this is a *cordiformis*, or heart-shell; whose sides are remarkably ridged in this transverse manner, and at the same time so divided longitudinally by seven high ribs running from the apex to the edge, that the whole represents the roof of a house with the beams and rafters, before they are covered by the tiling. Hence the French call it *faïtière*.

IMBRO, in *Geography*, an island in the Grecian Archipelago, mountainous and woody, with plenty of game; about 20 miles in circumference and containing five villages, two of which are defended by castles. N. lat. 40° 10'. E. long. 25° 46'.

IMELBORN, a town of Germany, in the county of Henneberg; 34 miles S.E. of Salzungen.

IMER, LA SIGNORA, in *Biography*, a female opera singer in London 1746, at the same time as Monticelli. Though she was nominally the first woman, she never surpassed mediocrity in voice, taste, or action.

IMGNAEL, in *Geography*, a town of Norway, in the diocese of Drontheim; 56 miles N.N.E. of Runsdal.

IMHOFF, JOHN WILLIAM, in *Biography*, an eminent genealogist, was a German of a noble family, who devoted himself to the study of history, politics, and particularly the descents and alliances of all the great houses in Europe. His principal works are "De Notitia Procerum Germaniæ;" "Historia Genealogica Italiæ et Hispaniæ;" "Familiarum Italiæ, Hispaniæ, Portugalliæ, Magnæ Britanniæ, cum Appendice;" "Recherches sur les Grands d'Espagne." He died in 1728.

IMIDSU, in *Geography*, a town of Japan, in the island of Nippon; 130 miles N.W. of Jedo.

IMIRETTA, IMERITIA, or IMMERETIA, a country of Asia, in European Turkey, which lies between the Caspian and Black seas, bounded on the E. and S E. by Georgia, on the N. by Offetia, or that part of Circassia, called the government of Caucasus, on the W. by Mingrelia, and on the S. by Turkish Armenia. It pertains to the ancient Iberia, and is about 80 miles from N. to S., and nearly as much from E. to W. The country is mountainous and poor; and the inhabitants are wanderers and vagabonds. Although it could formerly supply an army of 20,000 men, it is now thinly peopled, on account of the number of children purchased by the Turks, and an imposition laid upon them of furnishing annually 80 young men, between 10 and 20 years of age. The governing prince assumes the title of king of kings. The towns are few; but the principal seems to be Cotatis.

IMITATION, in the *Arts of Design*, has, as in other things, two acceptations; one of a confined, the other of a more vague sense. In the first it signifies merely copying closely the forms or colours of a work of art or nature; in the second, it is sufficient that the style of the thing imitated be maintained; and it is in this latter sense most frequently applied. Thus Raphael may be said to have imitated in his latter works the style of Michael-Angelo in design; and Julio Romano his master Raphael. Thus the whole Venetian school endeavoured to imitate Titian and Paul Veronese; and the Flemish Rubens, Rembrandt, and Teniers.

Imitation, thus considered, is the true source of advancement in art. Were it not for the attempt to follow in the paths of great men, the arts would be always in their infancy; be always stationary in their progress, if we may use the expression; and therefore whilst we deprecate a long continuance of dull copying the effects and defects of the greatest masters, we would recommend to all youths engaged in the polite arts, at all times to keep in their mind's-eye at least, the works of those who have successfully passed the ordeal of time: and most probably if they have original genius within them, its fire will be most usefully elicited by rivalry thus laudably excited. And not to youths alone will this conduct be found useful; right happy ought he to feel himself, who, adopting this plan, shall become able to unite the various beauties he may thus select.

Too much stress has been laid upon what is termed originality, to which title it would appear eccentricity has the surest claim. But that is not the foundation upon which the great artists of Italy, Spain, and Flanders, proceeded in their labours. Step by step they advanced upon the merits of their predecessors; till at last their own excellencies seem to leave little room for further advance in true taste: yet that mode of study which has produced so much, bids most fair to produce whatever may best be effected in art: viz. a careful imitation in the first instance of what has been done, till the mind is informed of the most important principles of art: and then a judicious examination, how far these works correspond with

nature; and wherein they are capable of receiving new beauties, consistent with the laws and principles by which she is governed. How far positive imitation of nature is, in painting or sculpture required by, or consistent with the best principles of those arts, see the article IDEAL, in *Painting and Sculpture*.

IMITATION may here be considered as one of the sources of pleasure to Taste. Accordingly it gives rise to what Mr. Addison terms the secondary pleasures of imagination, which form, without doubt, a very extensive class. For all imitation affords some pleasure; not only the imitation of beautiful or great objects, by recalling the original ideas of beauty or grandeur, which such objects themselves exhibited; but even objects, which have neither beauty nor grandeur, nay, some which are terrible or deformed, please us in a secondary or represented view. The high power, says Dr. Blair, which eloquence and poetry possess, of supplying taste and imagination with such a wide circle of pleasures, they derive altogether from their having a greater capacity of imitation and description than is possessed by any other art. Of all the means which human ingenuity has contrived for recalling the images of real objects, and awakening, by representation, similar emotions to those which are raised by the original, none is so full and extensive as that which is executed by words and writing. By the assistance of this happy invention, there is nothing, either in the natural or moral world, but what can be represented and set before the mind, in colours very strong and lively. Hence it is usual among critical writers, to speak of discourse as the chief of all the imitative or mimetic arts; they compare it with painting and with sculpture, and in many respects prefer it justly before them. However, neither discourse in general, nor poetry in particular, can be called altogether imitative arts. We must distinguish, says Dr. Blair, betwixt imitation and description, which are ideas that ought not to be confounded. Imitation is performed by means of somewhat that has a natural likeness and resemblance to the thing imitated, and of consequence is understood by all; such are statues and pictures. Description, again, is the raising in the mind the conception of an object by means of some arbitrary or instituted symbols, understood only by those who agree in the institution of them; such are words and writing. Words have no natural resemblance to the ideas or objects which they are employed to signify; but a statue or a picture has a natural likeness to the original. And therefore imitation and description differ considerably in their nature from each other. Nevertheless, imitation and description agree in their principal effect, of recalling, by external signs, the ideas of things which we do not see. But though in this they coincide, it should not be forgotten, that the terms themselves are not synonymous, that they impart different means of effecting the same end; and of course make different impressions on the mind. Blair's Lect. vol. iii. See POETRY.

IMITATION, in *Music*, dramatic or theatrical, belongs to imitation, as much as poetry and painting do: in this instance it is a principle common to all arts. But this imitation does not belong to all arts to the same extent. All that the imagination can convey to the mind belongs to poetry. Painting, which cannot present its pictures to the imagination, but to sense, and to one sense only, can only paint objects submitted to the judgment of the eye. Music should seem to have the same bounds with respect to the ear; however, she can represent every thing, even objects that are only visible: by an illusion almost inconceivable, she seems to put the eye into the ear; and the greatest miracle of an art, which totally depends on movement, is, that it can excite an idea of repose. Night, sleep, solitude,
and

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and silence; all enumerated among the great pictures of music. It is known that noise can produce the effect of silence, and silence the effect of noise: as when we fall asleep during an even-toned and monotonous reading, and that we wake the instant it ceases. But music acts more immediately upon our sensation in exciting by one sense similar affections to those which we can excite by another. And, as the relations cannot be sensible unless the impression is forcibly made, painting, stripped of this force, cannot return to music those imitations which music draws from her ideal painting. Let all nature sleep, the person who contemplates her at such time is not asleep. And the musician's art consists in substituting to the insensible object that of movement, which its presence excites in the heart of the beholder. It will not only agitate the sea, increase the flames of a conflagration, render the stream of a river more rapid, produce showers, and swell torrents; but will paint the horror of a frightful desert, blacken the walls of a subterraneous dungeon, calm the tempest, render the air tranquil and serene, and shed from the orchestra new freshness on the grove. It will not represent these things directly; but it will awaken in the mind the same sensations which we feel in seeing them.

It has been said in the article HARMONY, that we can draw from it no principle of musical imitation, as there is no relation between chords and objects which we wish to paint, or passions which we would express. See MELODY.

IMITATION, in its technical sense, is using the same, or a similar passage or melody, in many different parts, which are heard one after the other: in the unison, 5th, 4th, 3d, or in any other interval whatever. Imitation is always pleasing, even if many notes are changed, provided the air is not so disguised as to be no longer recognizable, and the rules of modulation are not violated. Often, in order to render imitation more perceptible, it is preceded by a rest, or by long notes, which seem to extinguish the melody at the very moment when it is renewed by the imitation. Imitations are warrantable at our pleasure; they are confined to no particular intervals, they may be continued or changed for another, or the imitation made in *moto contrario*, or contrary motion, or in what way we please. The several performers like it better than a dull and dry accompaniment; it renders a part more amusing to the player and important to the hearer; the rules are as relaxed as those of fugue are rigid: for which reason great masters disdain imitations from the facility with which they are composed; and when pursued too closely with the manifest ambition of being particularly noticed, they discover the *young* contrapuntist. Rousseau.

IMITATION, *Principle of, in Medicine.* Man was characterized by Aristotle as an *imitative* animal; and a propensity to imitation appears from the first dawn of reason in infants, and in some measure accompanies us through life. By this term, we do not mean to designate that voluntary and deliberate imitation, by which we copy the dress, language, or manners of others; but that sort of *irritative* imitation, (to adopt the language of Dr. Darwin,) of which we are almost unconscious, and to which we are drawn mechanically, as it were, by a propensity, which it requires an act of volition to resist;—"cette imitation machinale, qui nous porte malgré nous à répéter ce qui frappe nos sens," as the French commissioners have expressed it. (Rapport des Commissaires, chargés par le Roi de l'Examen du Magnétisme Animal, p. 77; Paris 1784.) The most familiar example of this propensity that can be adduced, is the act of *yawning*, which is readily propagated from one person through a whole company. But there is scarcely any irregular action of any organ of the body, which has not been caught (to use a

common phrase), in consequence of this tendency to imitation, by different individuals: thus *squinting*, *flammering*, *winking* with the eyes, and various unseemly habits, have been frequently acquired, by associating with those to whom they were already habitual. In a similar manner, many people are immediately excited to the act of *vomiting* by the sight of a person in the same act; and various convulsive disorders have been caused by looking on others affected with them. Baglivi mentions a young man, who, looking at a person in an *epileptic* fit, was himself affected in the same manner: and Dr. Whytt says, "it has frequently happened in the Royal Infirmary here (at Edinburgh), that women have been seized with *hysteric* fits, from seeing others attacked with them;" a fact, which the writer of this article has also witnessed in the same hospital.

A remarkable example of this infectious nature of convulsive diseases, (if the term may be used in this sense,) occurred in the poor's house at Haerlem, under the inspection of the learned Dr. Boerhaave, of which his nephew has given the following account. "In the house of charity at Haerlem, a girl, under an impression of terror, fell into a convulsive disease, which returned in regular paroxysms. One of the by-standers, intent upon assisting her, was seized with a similar fit, which also recurred at intervals; and on the day following, another was attacked; then a third, and a fourth; in short, almost the whole of the children, both girls and boys, were afflicted with these convulsions. No sooner was one seized, than the sight brought on the paroxysm in almost all the rest at the same time. Under these distressing circumstances, the physicians exhibited all the powerful antiepileptic medicines with which their art furnished them; but in vain. They then applied to Boerhaave, who, compassionating the wretched condition of the poor children, repaired to Haerlem; and whilst he was inquiring into the matter, one of them was seized with a fit, and immediately he saw several others attacked with a species of epileptic convulsion. It presently occurred to this sagacious physician, that, as the best medicines had been skilfully administered, and as the propagation of the disease from one to another appeared to depend on the imagination, (or the principle of imitation,) by preventing this impression upon the mind, the disease might be cured: and his suggestion was successfully adopted. Having previously apprised the magistrates of his views, he ordered, in the presence of all the children, that several portable furnaces should be placed in different parts of the chamber, containing burning coals, and that irons, bent to a certain form, should be placed in the furnaces; and then he gave these farther commands:—that all medicines would be totally useless, and the only remedy with which he was acquainted, was, that the first who should be seized with a fit, whether boy or girl, must be burnt in the arm, to the very bone, by a red-hot iron. He spoke this with uncommon dignity and gravity; and the children, terrified at the thoughts of this cruel remedy, when they perceived any tendency to the recurrence of the paroxysm, immediately exerted all their strength of mind, and called up the horrible idea of the burning; and were thus enabled, by the stronger mental impression, to resist the influence of the morbid propensity." (Abr. Kaau-Boerhaave, *Impet. faciens*; Hippoc. dictum, ix. § 406.) This case affords at once an illustration of the powerful operation of the imitative principle, and of the influence of the imagination, when excited by strong impressions, over the diseases of the body, as related in a preceding article. See IMAGINATION.

If we trace the operation of this imitative propensity a little farther, we find that convulsive disorders are not only communicated, in this manner, to persons who live in the same

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same house or apartment; but that they have, in many instances, been propagated from house to house, by the intimate intercourse of persons in the same neighbourhood, and thus a sort of *epidemical convulsions* has been produced. At the latter end of the year 1796, Dr. Haygarth was consulted respecting a convulsive malady, which prevailed for some time among the tenants of the earl of Uxbridge and Holland Griffith, esquire, in the island of Anglesey. This disease gradually spread from one girl to twenty-three others, all between the age of ten and twenty-five; except one boy, seventeen years old, all the patients were females. This disorder began with pain in the head, and sometimes in the stomach and side, but not very violent: this was succeeded by violent twitchings or convulsions of the upper extremities, continuing with little intermission, and causing the shoulders almost to meet by the exertion. The second person attacked was sister of the first, and lived in the same house; the third and fourth were acquaintances, and had been much alarmed at seeing the fits of the first patient. In the course of two or three months, eighteen girls were thus attacked, of whom only two had recovered. The influence of the imagination, as well as of the principle of imitation, was obvious from the general alarm and anxiety which prevailed; a state of mind which predisposes to the operation of this principle, as was exemplified by the animal-magnetism. (See IMAGINATION.) "All of them," says Mr. Griffith, "as far as I can understand, were taken much in the same manner with the first three. Their lower extremities are free from spasms, although they find themselves considerably relaxed. The least alarm throws them into a shaking fit. They have in general a hiccup. The anxiety of parents, sisters, brothers, friends, &c. for their recovery, is particularly obvious in this neighbourhood." (See Dr. Haygarth's pamphlet, "On the Imagination as a Cause and as a Cure of Disorders of the Body; exemplified by fictitious Tractors, and epidemical Convulsions," 1800.) This intelligent physician, after prescribing some antispasmodic medicines, desired Mr. Griffith to use all his authority to prevent girls and young women from having any communication with persons affected with these convulsions, and to keep those who were ill of the distemper separate from each other, as much as possible. "I warned him," Dr. Haygarth says, "that if these cautions were not observed, the epidemic might spread through the whole island of Anglesey." Loc. cit. p. 35.

Dr. Haygarth was led to take this view of the subject, from his recollection of the case of the children in the poor-house at Haerlem, and of the occurrence of a convulsive disease of the hysterical kind, which, about thirty years before, had spread through the shire of Angus, in Scotland. Several imperfect descriptions of this malady may be found in the "Statistical Account" of Scotland. (See also Edin. Med. and Surg. Journ. for Oct. 1807, vol. iii. p. 434.) Dr. Whytt long ago noticed the frequency of convulsions in Zetland, and he adduced the extreme facility with which they were propagated among the young women of that island, as a proof of the existence of a wonderful sympathy between the nervous systems of different individuals, by means of which various motions and morbid symptoms are often transferred from one to another, without any corporal contact or infection. (Essay on Nervous Disorders, chap. iii. sect. vi.) An account of this disease, related by the minister of the parish of Unst, the most northerly of the Shetlands, is given in the Edinburgh Journal, just quoted. "There is a shocking distemper, which has of late years prevailed pretty much," (he writes in 1774,) "especially among young women, and was hardly known 30 or 40 years

ago. About that period *only one person* was subject to it. The inhabitants gave it the name of convulsion fits; and, indeed, in appearance, it something resembles an epilepsy. In its first rise, it began with a palpitation in the heart, of which they complained for a considerable time; it at length produced swooning fits, in which people seized with it would lie motionless upwards of an hour. At length as the distemper gathered strength, when any violent passion seized, or on a sudden surprize, they would all at once fall down, toss their arms about, writhe their bodies into very odd shapes, crying out all the while most dismally, throwing their heads about from side to side, with their eyes fixed and staring. At first this distemper obtained in a private way with one female, but she *being seized in a public way at church*, the disease was communicated to others, but whether by the influence of fear or *sympathy* is not easy to determine." (P. 438, vol. iii.) In another of the northern parishes, Delsing, the disease was very prevalent. "The patient is first seized with something like fainting, and immediately after utters wild cries and shrieks, the sound of which, at whatever distance, immediately puts all who are subject to the disorder in the same situation. It most commonly attacks them *when the church is crowded*, and often interrupts the service in this and many other churches in the country. On a sacramental occasion, fifty or sixty are sometimes carried out of the church, and laid in the church yard, where they struggle and roar with all their strength for five or ten minutes, and then rise up without recollecting a single circumstance that happened to them, &c." (See Statistical Account, vol. i. p. 385, 1791.) In this description we recognize the features of hysteria; and the influence of moral causes in removing, as well as in inducing these convulsive maladies, was evinced in the parish of Northmaven, where the disease was thus extinguished. "The cure is attributed to a rough fellow of a kirk-officer, who tossed a woman in that state, with whom he had been frequently troubled, into a ditch of water. She was never known to have the disease afterwards, and others dreaded the like treatment." (Stat. Acc. vol. xii. p. 363, 1794.) Here the principle of cure was perfectly analogous to that resorted to by Boerhaave in the work-house at Haerlem.

Every species of mental emotion is propagated in a similar manner among crowds of people under various circumstances, and the more readily when they are accompanied by corporeal actions. If the sight of a number of persons, in the act of yawning, almost irresistibly impels us to yawn with them; so the sight of a multitude of sorrowful countenances, or of countenances in furious anger, carries us into similar feelings, and renders us most acutely susceptible of corresponding impressions from the slightest causes. Hence arises much of the *magnanimity* of armies, on the one hand, and the facility of the propagation of *panic*, on the other; hence the uncontrollable fury of mobs, &c. But there is no general emotion, which renders the body more completely subservient to every degree of this sympathetic or imitative influence, than that of religious enthusiasm. This was exemplified, in a striking manner, in the epidemic convulsions, which occurred in the parish of Cambuslang, in Lanarkshire, in 1742, and is well described by Dr. Meik. The minister, Mr. McCulloch, who was an enthusiast, and a follower of Whitefield, by incessant zeal and labour in his vocation, and by reading and circulating, in halfpenny pamphlets, various missives, attestations, and journals, giving an account of conversions in different parts of the world, excited an extraordinary concern about religion in his neighbourhood. In consequence of a petition, signed by ninety masters of families, a weaver and a shoemaker,

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being at their head, he gave evening lectures on the week days occasionally; and afterwards they were daily employed for many hours in fervent prayer; in the minister's house, and hearing his lectures; and great numbers cried out publicly, and many returned to his house expressing strong convictions of sin and alarming fears of punishment. "The way in which the converts were affected," says Dr. Meik, "for it seems they were affected much in the same way, though in very different degrees, is thus described. They were seized all at once, commonly by something said in the sermons and prayers, with the most dreadful apprehensions concerning the state of their souls, inasmuch that many of them could not abstain from crying out in the most public and frightful manner, "bemoaning their lost and undone condition by nature, &c. &c.; declaring that they saw the mouth of hell open to receive them, and that they heard the shrieks of the damned;" but the universal cry was, "what shall we do to be saved?" The agony under which they laboured, was expressed not only by words, but also by violent agitations of body; by clapping their hands and beating their breasts; by *shaking* and *trembling*, by *faintings* and *convulsions*; and sometimes by excessive bleeding at the nose. While they were in this distress, the minister often called out to them, not to trifle or smother their convictions, but to encourage them; and after the sermon was ended, he retired with them to the manse, and frequently spent the best part of the night with them in exhortations and prayers." &c. Some of those, it is said, who thus "fell under conviction," were never converted; but some were converted in a few hours.

It is impossible to read this account without recollecting the operations of Mesmer with his animal magnetism, and their close similarity with these fanatical proceedings; especially the exact analogy of the phenomena, when the magnetised persons were said to *fall into the crisis* ("tomber en crise"), and these zealots to *fall under conviction*. Both these events were the result of strong impressions on the imagination continued for some time; in both, the shakings and sobbings, the faintings and convulsions occurred; and in both these crises were most rapidly produced, after one person had become thus affected. (See IMAGINATION.) Under the article just referred to, we have adduced the demonstrative proofs, obtained by the French commissioners, that all those phenomena attributed to *magnetism*, were the products of the heated *imagination*, augmented by the principle of *imitation*; and we cannot but refer these analogous effects of fanaticism to the same natural causes. Upon this ground they were generally explained at the time by rational people. "That the work of Cambuslang ought to be ascribed neither to the influence of the Holy Spirit, nor to the influence of the devil, but to the influence of fear and hope, of sympathy and example, aided by peculiar circumstances, was the general opinion of those," Dr. Meik observes, "who are known in the church of Scotland by the name of the moderate party. The only extraordinary circumstance relating to this work, is the external effect on the bodies of men by which it manifested itself; and these, they thought, might be sufficiently explained by the operation of natural causes, &c." "When this work was once begun, they maintained, that the effects of sympathy and example (*i. e.* the principle of imitation) sufficiently explain its future progress. Every day's experience shews that we are *disposed to imitate* the actions of others, and that we are naturally, and, as it were, *mechanically* moved by seeing them, either in the depth of distress, or in the height of exultation. The operation of these principles was visible in almost every instance. Whenever any one was affected,

many others were affected in a similar manner. Whenever any one cried aloud, either through excessive grief or joy, but especially the former, many others cried aloud likewise, using the same words, or words of the same meaning. Statist. Acc.

At a still more recent period, namely, in the summer of 1803, a species of *chorea*, or St. Vitus dance, became epidemic in Tennessee, in America, connected with the prevalence of religious enthusiasm. Great numbers of people were collected together, especially at their extraordinary meetings, which commonly lasted from three to five days; and many of them remained on the spot day and night, the whole or greater part of the time, worshipping their Maker almost incessantly. "The outward expressions of their worship consisted chiefly in alternate crying, laughing, singing, and shouting, and, at the same time, performing that great variety of gesticulation which the muscular system is capable of producing. It was under these circumstances that some found themselves unable, by voluntary efforts, to suppress the contractions of their muscles; and to their own astonishment and the diversion of many of the spectators, they continued to act from *necessity* the curious character which they had commenced from *choice*. The disease no sooner appeared than it spread with rapidity through the medium of the principle of *imitation*: thus it was not uncommon for an affected person to communicate it to the greater part of a crowd, who, from curiosity or other motives, had collected around him. It is at this time (1805) in almost every part of Tennessee and Kentucky, and in various parts of Virginia; but it is said not to be so contagious (or readily communicated) as at its commencement. It attacks both sexes, and every constitution; but evidently more readily those who are enthusiasts in religion (such as those above described), and females: children of six years of age, and adults of sixty, have been known to have it; but a great majority of those affected are from fifteen to twenty-five. The muscles generally affected are those of the trunk, particularly of the neck, sometimes those of the superior extremities, but rarely, if ever, those of the inferior. The contractions are sudden and violent, such as are denominated convulsive, being sometimes so powerful, when in the muscles of the back, that the patient is thrown on the ground, where for some time his motions more resemble those of a live fish, when thrown on land, than any thing to which I can compare them. This, however, does not often occur, and never, I believe, except at the commencement of the disease, &c." See an Inaugural Essay on Chorea Sancti Viti. By Felix Robertson, of Tennessee, Philadelphia, 1805. Edin. Med. and Surg. Journal, vol. iii. p. 446.

In consequence of the facility with which such convulsive motions are communicated by *imitation*, various corporeal movements which fanaticism or enthusiasm had associated with devotional exercises, have become characteristic of certain sects, to which they have even given names. From this source, it would appear, have originated the appellations of *Jumpers*, *Whirlers*, *Tremblers*; and even our now placid sect, the *Quakers*, have doubtless derived their denomination from some similar habit. A singular spasmodic disease, the *chorea* Sti. Viti, or *Saint Vitus's dance*, has most probably derived its appellation from the resemblance of the involuntary motions of the limbs to some of those religious or fanatical gesticulations. Tradition states that it was so named from the annual religious assemblies and fanatical dances, in honour of St. Vitus, which were celebrated on the first of May, at Ulm and Ravenspurg, and other parts of Germany. See CHOREA.

This subject is far from being exhausted. The preceding statements,

Statements, however, seem to afford a satisfactory illustration of a sympathy, or a mechanical, *i. e.* an involuntary tendency to *imitation*, which is a part of the human constitution, and is as visible in the slightest actions, such as yawning, as in those which more forcibly arrest attention, and excite emotions, such as convulsive fits. And when to this principle we add the power of the imagination over the physical state of the body, as evinced by the effects of metallic and counterfeit tractors, of the touching of kings and other gifted persons, of fainted shrines and relics, and of animal magnetism, &c.; we are enabled to explain the occurrence of a number of extraordinary phenomena in the history of man, which, if we viewed his moral and physical faculties separately, would appear altogether inexplicable by natural causes.

Dr. Haygarth has deduced this practical inference, for the direction of the physician, from the consideration of these facts; namely, that convulsive disorders ought not to be admitted into the female wards of hospitals; a suggestion which he caused to be acted upon in the Chester Infirmary. And it is important to know that, in districts where convulsive diseases are observed to be spreading, any medical or other intelligent and humane neighbour, who has influence and authority to hinder all intercourse between persons afflicted with and liable to such disorders, may prevent such calamities. See Dr. Haygarth's pamphlet, also Rapport des Commissaires above quoted, p. 67, *note*, where separation was proved to be an effectual cure. Similar cases may be found, in a work of M. Hecquet, "Le Naturalisme des Convulsions."

IMITATION, in *Oratory*, is an endeavour to resemble a speaker or writer in those qualities, with regard to which we propose them to ourselves as patterns. The first historians among the Romans, says Cicero, were very dry and jejune, till they began to imitate the Greeks, and then they became their rivals. It is well known how closely Virgil has imitated Homer in his *Aeneid*, Hesiod in his *Georgics*, and Theocritus in his *Eclogues*. Terence copied after Menander; and Plautus after Epicarmus, as we learn from Horace, lib. ii. ep. ad August. who himself owes many of his beauties to the Greek lyric poets. Cicero appears, from many passages in his writings, to have imitated the Greek orators. Thus Quintilian says of him, that he has expressed the strength and sublimity of Demosthenes, the copiousness of Plato, and the delicacy of Isocrates. *Inst. Or. lib. x. cap. 1.*

Writers on rhetoric have proposed three enquiries under the head of imitation, *viz.* Who are to be imitated? What we are to imitate? and in what manner? With respect to the first we shall only observe, that in common cases it is not always what is absolutely best, but comparatively so in its own kind, and best suits their own taste, that should determine persons in the choice of their patterns for imitation: however, only the best writers, and those whom we can most safely trust, says Quintilian, are to be read long. With respect to the second enquiry, the things to be imitated are the perfections of the best masters in their several kinds; and these are different, according to the various subjects in which they excel. As to the manner of imitation, it ought to be considered, that he who only copies or translates from another, and endeavours to pass it off for his own, is not an imitator but a plagiarist. The true art of imitation consists in so diversifying what we take from others, as, if we can, to improve it, or at least not suffer it to receive any detriment by our alteration. And this may be done, by so enlarging a thought, or expression taken from another, as in a good measure to render it

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our own: by either abridging, or only taking a part of what another has said before us; by keeping the thought and applying it to a different subject; and finally, by preserving the thoughts and applying them to the same subject, but changing their order, and representing them in a different dress. See Ward's *Orat. vol. ii. sect. 53 and 54.*

IMITAZIONE, *Ital.* imitation, in *Music*. See FUGATO.

IMIZIMIS, in *Geography*, a town of Morocco, on the mountains of Atlas; 60 miles S.W. of Morocco.

IMLIATSKAIA, a town of Russia, in the government of Upha, on the river Imliat; 60 miles E.N.E. of Tchelebinsk.

IMMA, in *Ancient Geography*, a town of Asia, in Syria; situated at the northern point of a mountain E. of Orontes, towards the south-east of Antiochia.

IMMACULATE, *without stain*, a term much used among the Romanists: when speaking of the conception of the Blessed Virgin, they call it immaculate.

When the cap is given to a doctor of the Sorbonne, he is obliged to swear that he will defend the immaculate conception. This was decreed by an act of the Sorbonne in the fourteenth century; in imitation of which, eighty other universities made the same order.

The military orders in Spain are all solemnly obliged to defend this prerogative of the Virgin. See CONCEPTION.

There is also a Congregation of the Immaculate Conception; in most nunneries whereof is a society of secular maids, whose end is to honour the immaculate conception: of which they make a public protestation every year, and a private one every day. See THEATINES.

IMMANENT, in *Logic*. The schoolmen distinguish two kinds of actions; the one *transient*, which passes from the agent to the patient; the other *immanent*, which continues in the agent. See ACTION.

IMMATERIALITY, abstraction from matter; or what we understand by pure spirit.

Plato proves the immateriality of the soul from these six topics. 1. Its simplicity. 2. Its independency on the body, which is twofold; in its *esse*, and in its *operari* in existing, and in acting or operating separately. 3. Its rule and authority over the body. 4. Its likeness and similitude to God, which discovers itself in the pleasure it enjoys in spiritual things, in its aiming at spiritual objects, &c. 5. Its spiritual manner of perceiving material objects. And, lastly, its indivisibility, capacity, activity, and immortality. See SOUL.

IMMEDIATE, that which precedes or follows some other thing, without any interposition.

IMMEDIATE also signifies something that acts without means, or without medium. In which sense we say, immediate grace, and immediate cause, &c.

IMMEDIATE *Mode*. See MODE.

IMMEDIATE *Fire*. See FIRE.

IMMEMORIAL, an epithet given to the time or duration of any thing whose beginning we know nothing of.

In a legal sense, a thing is said to be of time immemorial, or time out of mind, that was before the reign of our king Edward II.

IMMENDORF, in *Geography*, a town of Austria, eight miles N. of Sonneberg.

IMMENZAUSEN, a town of the principality of Hesse-Cassel; eight miles N.N.W. of Cassel. N. lat. 51° 5'. E. long. 9° 25'.

IMMENSE, that whose amplitude, or extension, is

finite measure whatsoever, or how oft soever repeated, can equal.

IMMENSTADT, in *Geography*, a town of Germany, in the county of Konigsberg, on a small river, which soon after joins the Iller; 12 miles S. of Kempten.

IMMER, one of the islands called New Hebrides, in the South Pacific ocean. S. lat. 19° 16'. E. long. 169° 46'.

IMMERETIA. See **IMIRETTA**.

IMMERSION, an act by which any thing is plunged into water, or some other fluid.

In the first ages of Christianity, baptism was performed by immersion; by three immersions. The custom of immersion is said to be still preserved in Portugal, and among the Anabaptists in other parts. See **BAPTISM**.

IMMERSION, in *Pharmacy*, is the preparation of some medicine, by letting it steep for some time in water, in order to take some ill quality or taste from it.

This is done in rhubarb, to moderate its force; in lime to take away its salt; and in olives, which are preserved in brine.

IMMERSION, in *Astronomy*, is when a star or planet comes so near the sun, that we cannot discern it; being as it were enveloped, and hid in the rays of that luminary.

IMMERSION also denotes the beginning of an eclipse of the moon; that is, the moment when the moon begins to be darkened, and to enter into the shadow of the earth.

The same term is also used with regard to an eclipse of the sun, when the disk of the moon begins to cover it.

In this sense, immersion stands opposed to *emergence*, which signifies the moment wherein the moon begins to come out of the shadow of the earth; or the sun begins to shew the parts of his disk which were hid before.

IMMERSION is frequently applied to the satellites of Jupiter, and especially to the first satellite; the observation whereof is of so much use for discovering the longitude.

The immersion of that satellite is the moment in which it appears to enter within the disk of Jupiter; and its emergence the moment wherein it appears to come out.

The immersions are observed from the time of the conjunction of Jupiter with the sun, to the time of his opposition; and the emergences from the time of his opposition to his conjunction. The peculiar advantage of these observations is, that during eleven months of the year they may be made, at least, every other day. The perfection of the theory, and the praxis thereon, we owe to M. Cassini.

IMMERSION, *Scruples of*. See **SCRUPLE**.

IMMICTIO, an inability of retaining the urine. See **INCONTINENCE of Urine**.

IMMORTAL, that which will last to all eternity, as having in itself no principle of alteration or corruption.

Plato defines immortality *ἡ αἰὲν ὑπάρχουσα ἀθάνατος μοῖρα*, *animated essence and eternal mansion*; and proves the immortality of the soul from two kinds of arguments; the one *artificial*, and the other *inartificial*.

The inartificial arguments for the soul's immortality are testimonies and authorities, whereof he cites several; and adds in general, that all the great men and poets, who had any thing divine in them, have at all times asserted the immortality of the soul.

Artificial or proper arguments for the immortality are either *speculative* or *practical*: of the first kind are those drawn from, 1. The simple, uniform, spiritual, and divine nature of the soul. 2. From its infinite capacity. 3. Its desiring and longing after immortality, and its inward horror of falling into nothing; proving it absurd that

the soul should die, when life is its proper and adequate object. 4. Its rational activity; proving that whatever has in itself a principle of rational and spontaneous motion, by which it tends towards some supreme good, is immortal. 5. The various ideas which it has of spiritual things; particularly the idea it has of immortality: and, 6. Its immateriality.

His practical or moral arguments for the immortality of the soul, are drawn from, 1. The justice of God, which can never suffer the wicked to escape unpunished, nor the good unrewarded after death. 2. The dependence which religion has on this opinion, because, without this persuasion, there would be no religion in the world. 3. The opinion which men have, that justice and every kind of virtue are to be cultivated, that they may at last live with God. 4. The stings of conscience, and anxious solicitude we are under about a future state. See **SOUL**.

IMMORTAL Flower, in *Botany*. See **GOMPHIRENA**.

IMMUNITY, a privilege or exemption from some office, duty, or imposition.

Immunity is more particularly understood of the liberties granted to cities and communities.

The princes heretofore granted all kinds of immunities to ecclesiastics, exempting them from all impositions; but the ecclesiastics of those days were not so rich as those of ours: they gave all they had to the poor.

There is still a privilege of immunity in some places, and especially in Italy, belonging to ecclesiastical things, and persons; who are exempted from certain dues, and are sheltered from the pursuits of justice. Though there are some crimes for which they cannot plead the privilege of their immunity, as premeditated murder, &c.

IMMUTABLE SYSTEMA. See **SYSTEM**.

IMMUTABILITY, the condition of a thing that cannot change.

Immutability is one of the divine attributes. See **GOD**.

IMMYNS, JOHN, in *Biography*, a self-taught musician, said to have become a notable lutenist after 40, by the perusal of Master Mace, whose ideas, taste, and language seem to have been perfectly congenial. Immys founded the Madrigal society, and was so convinced of the perfection of that species of music, particularly of queen Elizabeth's reign, that "he looked on Handel and Bononcini as the great corrupters of the science." He had a cracked counter-tenor voice, played on the common flute, the viol da gamba, violin, and harpsichord, but on none of them well. Though originally an attorney, there was doubtless a conflict between the two professions—

———— "but music won the cause."

However, with all his harmonical zeal and enthusiasm, he never obtained a higher rank in the profession, than that of amanuensis to Dr. Pepusch, and copyist to the Academy of Ancient Music at the Crown and Anchor. Yet he was always in cheerful spirits; and the honour of having established the Madrigal society, and being its chairman at different alehouses in the city, presiding over dilettanti tradesmen, mechanics, and psalm singers, contributed as much, perhaps, to his pride and felicity, as the being president of the Royal Society, or speaker of the house of commons could have done. But alas! the tyrant Death dragged him from all his sublunary felicity in 1764.

IMOLA, INNOCENCIO DA. See **FRANCUCCI**.

IMOLA, in *Geography*, a town of Italy, in the department of the Amona, anciently called "Forum Cornelii," or "Forum Julii," situated on an island, formed by the river Salerno, surrounded with walls, towers, and ditches, and defended

fended with a strong castle; the see of a bishop, suffragan of Ravenna. It contains 16 churches and 17 convents. After having been occupied by different possessors, Cæsar Borgia became master of it, and annexed it, with the rest of Romagna, to the dominions of the church; 18 miles S.E. of Bologna. N. lat. 44° 22'. E. long. 11° 32'.

IMOMNAGUR, a town of Hindoostan, in Bahar; 25 miles E.S.E. of Bahar.

IMORI, a town of Japan, in the island of Nippon; 16 miles S. of Meaco.

IMPACH, a town of Austria; six miles W.N.W. of Crems.

IMPALED, in *Heraldry*, is understood of a shield party per pale, or divided into two halves by a line drawn palewise through the middle, from the top to the bottom.

When the coats of arms of a man and his wife, who is not an heiress, are borne in the same escutcheon, they must be impaled, or marshalled in pale, *i. e.* the husband's on the right side, and the wife's on the left; and this the heralds call *baron and femme*, two coats impaled.

Impaling hath been practised in three different ways: 1. By dimidiation, that is, by halving or cutting the shields of the arms of both husband and wife into two equal parts, and then joining the dexter half of the husband's coat to the sinister half of the wife's; thus making up or forming a whole shield. In this mode, called "Accolée," the French kings used to impale the arms of Navarre. The 2d mode is by dimidiating the husband's arms, and impaling that with the full coat of the wife's. The *last* general and present rule is that of impaling the two whole coats, except when there is a border round one or both of them; for the border must never be carried all round an impaled coat. This dimidiation of arms was much used in the reign of king Edward I.; in proof of which it is asserted by Mr. Sandford in his "Genealogical History," that Margaret, sister to Philip IV. king of France, and second wife to king Edward I., had, on her seal, in 1299, the arms of England so dimidiated with those of France, and that she was the first queen of England who had her arms so marshalled. This method of impaling arms by dimidiation hath been for some time laid aside in England, though it has been continued in France. It was a frequent practice with the nobility of England, from the reign of Edward III. to that of Henry VII. to quarter the arms of the wife; and also to place her arms in the first quarter, in preference to the paternal coat of the husband's family, particularly if her family was of greater dignity; and Mr. Nisbet, in his "System of Heraldry," informs us, that it is a custom in Scotland, when a man marries an heiress, for him to quarter her arms with his own paternal coat; but he allows that it is not practised in any other country. Our heraldic authors say, these are the rules to be observed in impaling the arms of husband and wife. 1st. The husband's arms are always to be placed on the right side as baron, and the wife's on the left as femme. 2dly. That no husband can impale his wife's arms with his own, on a surcoat of arms, ensign or banner, but may use them impaled on other utensils. 3dly. That no husband impaling his wife's arms with his own, can surround the shield with the order of the garter, or with any other order; because, as Mr. Sandford argues, although the husband may give his equal half of his escutcheon, yet he cannot share his temporary order of knighthood with her, except she be sovereign of the order. The mode lately adopted for knights of the Garter, Bath, and Thistle, to wear their arms and those of their wives in two separate shields, with the garter or order round their own coat only, is taken from the French; but Mr. Edmondson does not hold this to be good

armoury, because the arms cannot be said to be impaled baron and femme, as hath been usual in England upwards of 600 years. However, on the decease of the knight her husband, when she becomes a widow, the wife ought not in any respect to bear the garter round her arms, because, on the demise of the knight, his honour of knighthood reverts to the crown.

It hath been laid down as a rule by many, that if a man hath had two wives, he may impale both their arms on the sinister side, those of the first wife in chief, and those of the second in base. It hath also been said, that if a man hath had two wives, he may place his own arms in pale, and those of his two wives on the dexter and sinister side, giving the first the dexter side; and so, if he had six wives, he may place the arms of three of them on the dexter side, and those of the other three on the sinister side. But the errors of these positions, says Mr. Edmondson, are so flagrant, that they need little argument to refute them. The intent of impaling a wife's arms is to shew that the man is then married to a woman of that particular family, whose arms are impaled with his own; therefore, when by her death he is released from that marriage, he ceases to bear the arms of her family. The case is different in regard to a widow: whilst she remains such, she is obliged to bear the arms of her deceased husband.

Kent asserts that no women, except such as are heiresses, are entitled to have their arms impaled with those of the husband; but this is absurd, because impaling arms is intended to point out the family into which the husband is married, and not to indicate that the wife brought with her any real or personal property whatever. In impaling of a coat, you never put any marks of cadency for the first, second, and third daughter; but if there be any marks of cadency on the father's coat, all his daughters must continue the same.

Impaled arms are also borne by officers, as well ecclesiastical as civil, as archbishops, bishops, kings of arms, &c.; but with this difference from those of the manner of impalement of the arms of baron and femme, *viz.* that the arms of the church are to be placed on the dexter side, and the man's on the sinister. The like rule is to be observed in relation to civil officers.

IMPALEMENT, in a *penal* sense. } See EMPALEMENT.
IMPALEMENT, in *Phytology*.

IMPALPABLE, that whose parts are so extremely minute, that they cannot be distinguished by the senses, particularly by that of feeling.

IMPANATION; formed of *in* and *panis, bread*, a term used among divines to signify the opinion of the Lutherans with regard to the eucharist; who believe that the species of bread and wine remain, together with the body of our Saviour, after consecration. See CONSUBSTANTIATION.

IMPANATORES. See ADESSENARIJ.

IMPANNELLING, in *Law*. See EMPANNELLING.

IMPARES SCAMILLI. See SCAMILLI.

IMPARFAIT, Fr. imperfect. This word has many acceptations in music: as an imperfect chord, imperfect concord, imperfect cadence, &c. always opposed to perfection. The bearings which temperament requires, and which every interval, except the octave will allow, without greatly offending the ear, occasion *imperfect intervals*. See INTERVAL and TEMPERAMENT.

IMPARLANCE. See EMPARLANCE.

IMPARSONEE, in *Law*, is applied to a parson that is inducted, and in possession of a benefice.

IMPARTITO, *Ital.* is said of the solution of a canon, when it is written in score, or drawn out in different parts;

in opposition to *canone chiuso*, or a canon wrapt up in mystery.

IMPASSIBLE, that which is exempt from sufferings; or which cannot undergo pain, or alteration.

The Stoics place the soul of their wife man in an impassible, imperturbable state. See APATHY.

IMPASTATION, the mixture of divers materials of different colours and consistencies, baked or bound together with some cement, and hardened either by the air, or fire.

IMPASTATION is sometimes used for a sort of mason's-work, made of stucco, or stone ground small, and wrought up again, in manner of a paste.

Authors are of opinion that the obelisks, and the huge antique columns still remaining, were made, some by impastation, and others by fusion; but this is wholly erroneous; they are all cut out of quarries, yet open in Egypt, Arabia, &c.

IMPASTING, in *Painting*. See EMPASTING.

IMPATIENS, in *Botany*, is a genus so named from the great elasticity of the futures of its seed-vessels, which is completely impatient of the touch, curling up with the greatest velocity, and scattering round the seeds, the instant any extraneous body comes in contact with it. From this remarkable circumstance it has obtained the English appellation of "Touch me not." Linn. Gen. 458. Schreb. 597. Willd. Sp. Pl. v. 1. 1173. Mart. Mill. Dict. v. 2. Sm. Fl. Brit. 243. Ait. Hort. Kew. v. 3. 292. (Balsamina; Juss. 270. Tournef. t. 235. Gærtn. t. 113.)—Class and order, *Pentandria Monogynia*. Nat. Ord. *Corydalis*, Linn. *Gerania*, Juss.

Gen. Ch. *Cal.* Perianth very small, of two roundish, pointed equal leaves, placed towards the sides of the flower, coloured, deciduous. *Cor.* Five-petalled, irregular; the upper petal roundish, flat, slightly trifid, making a sort of upper lip; lower pair very large, obtuse; intermediate pair opposite, rising from the base of the upper petal; nectary receiving, like a hood, the base of the flower. *Stam.* Filaments five, very short, narrower towards the base, incurved; anthers five, connate, divided at the base. *Pist.* Germen superior, ovate-acuminate; style none; stigma simple, shorter than the anthers. *Peric.* Capsule one-celled, five-valved, bursting longitudinally and with great elasticity, the valves rolling spirally. *Seeds* several, roundish, fixed to a columnar receptacle.

Ess. Ch. Corolla of five petals, irregular, with an hooded nectary. Anthers slightly connected. Capsule superior, of five elastic valves. Calyx of two leaves.

Obs. The anthers being united induced Linnæus and many other authors to refer this genus to *Syngenesia Monogamia*; but since the abolition of that order from the Linnæan system, it of course belongs to *Pentandria Monogynia*. In some species the middle petals are wanting, and in some the horn of the nectary. The capsule differs in figure; hence the *Impatiens* of Rivinus had a long capsule, and his *Balsamine* an ovate one.

1. I. *Noli me tangere*. Yellow balsam, or Touch me not. Linn. Sp. Pl. 1329. Engl. Bot. t. 937. "Flower-stalks solitary, bearing many flowers. Leaves ovate. Joints of the stem swelling."—Not unfrequent in the northern parts of England and Wales, particularly in the neighbourhood of the lakes of Cumberland, flowering in August.—*Root* fibrous, small, spreading horizontally. *Stem* solitary, erect, about two feet high, succulent, pellucid, smooth and polished. *Leaves* alternate, on foot-stalks, ovate, obtuse, serrated, the lower serratures brittle; Villars remarks they become flaccid and as if withered in the night, but this is

not always the case. *Flower-stalks* axillary and branched, bearing three or four yellow, pendulous flowers, dotted with red internally. *Nectary* funnel-shaped, with a recurved top. *Capsule* oblong, gibbous, pendulous; its valves so elastic that they burst and scatter the seeds before the capsule is ripe. Hence the Latin names of "Impatiens" and "Noli me tangere;" and the English names of "Quick in hand," alive, as it were, in the hand. Gerard calls it "Codded Arsmart," and Parkinson, "Wild Mercury." The elasticity of the seed-vessel has furnished names in most of the European languages. In the day time the leaves are expanded, but at night they hang pendant, contrary to what is observed in most plants which, from a deficiency of moisture, or a too great perspiration from heat, commonly droop their leaves during the day. This plant was formerly considered as diuretic and vulnerary, and was given to relieve the hæmorrhoids and the strangury. Boerhaave regarded it as poisonous. It is now confined wholly to the flower-garden, where, however, it is not often seen. It is the only species of *impatiens* wild in Europe. It is also found in Canada. With us, it occurs in Wales and the northern counties of England, in moist shady places, and by the banks of rivulets. It flowers in July and August.

We have described the only British species of this singular genus. Willdenow enumerates twelve species, which, like the seven Linnæan ones, are divided into such as have single-flowered peduncles, and such as have many flowers on each stalk, in which latter division the *Noli me tangere* occurs.

The seeds of these plants should be sown on a moderate hot-bed in the spring, and when the plants are an inch high, they should be transplanted on another hot-bed at about four inches distant each way, shading them from the sun till they have taken new root; after which free air should be copiously admitted to them, when the weather is favourable, and they should be often refreshed with water. When they are so large as to touch each other, they should be taken up with balls of earth to their roots, and each planted in a separate pot filled with light rich earth, and plunged into a very moderate hot-bed under a deep frame, shading them from the sun till they have taken fresh root. They should then be accustomed to bear the open air, into which part of the plants may be removed in July, placing them in a warm situation; where, in a favourable season, they will flower and make a fine appearance. But part should be kept in a glass case or deep frame, in order to get good seeds. Those who are curious to preserve these plants in perfection pull off all the single and plain coloured flowers from the plants which they preserve for seeds, leaving only those flowers which are double, and of good colours; and thus they may be continued without degeneracy.

IMPEACHMENT, from the Latin, *impetere*, to set upon, or attack; or rather from the French, *empêcher*, to hinder, in *Law*, is the accusation and prosecution of a person for treason, or other crimes and misdemeanors. Any member of the lower house of parliament may impeach any one belonging either to that body or the house of lords. The method of proceeding is to exhibit articles on the behalf of the commons, by whom managers are appointed to make good their charge. These articles are carried to the lords, by whom every person impeached by the commons is tried; and if they find him guilty, no pardon under the great seal can be pleaded to such an impeachment. (12 & 13 Will. III. c. 2.) A commoner cannot, however, be impeached before the lords for any capital offence, but only for high

high misdemeanors. A peer may be impeached for any crime; the articles of impeachment are a kind of indictment, found by the house of commons, and afterwards tried by the lords, who, in cases of misdemeanors, are considered not only as their own peers, but as the peers of the whole nation. This custom is derived from the constitution of the ancient Germans, who, in their great councils, sometimes tried capital accusations relating to the public: "licet apud concilium, accusare quoque, et discrimen capitis intendere." Tacit. de Mor. Germ. 12. Blackst. Com. vol. iv.

IMPEACHMENT of Waste, a restraint from committing of waste upon lands and tenements; or a demand of recompence for waste made by a tenant who has but a limited estate in the land granted.

He that hath a lease without impeachment of waste, hath by that a property or interest given him in the houses and trees, and may make waste in them without being called to an account for it. See **WASTE**.

IMPECCABLES, in *Church History*, a name given to those heretics, who boasted that they were impeccable, and that there was no need of repentance; such were the Gnostics, Priscillianists, &c.

IMPECCABILITY, the state of a person who cannot sin: or a grace, privilege, or principle which puts him out of a possibility of sinning.

IMPEDIMENTS, in *Law*, are such hindrances as put a stop or stay to a person's seeking for his right by a due course of law. Persons under impediments are those under age, or coverture, *non compos mentis*, in prison, beyond sea, &c. who, by a saving in our laws, have time to claim, and prosecute their rights, after the impediments are removed, in case of fines levied, &c.

IMPEDIMENTS of Marriage. See **MARRIAGE**.

IMPEDIT, in *Law*. See **QUARE Impedit**.

IMPENETRABILITY, a quality whereby a thing becomes unable to be pierced or penetrated; or a property of body whereby it fills up certain spaces, so that there is no room in them for any other body.

IMPENITENCE, or **IMPENITENCY**, an hardness of heart, which makes a person persevere in vice, and prevents his repentance.

IMPERATIVE, in *Grammar*, is one of the moods or manners of conjugating a verb, serving to express a commandment; as *go, come*, &c. The imperative, according to bishop Wilkins, is one of the primary modes or moods, the indicative being the other: by this the speaker expresses his will to him that has the thing in his power; namely, to his superior by petition, to his equal by persuasion, and to his inferior by command; and the manner in which these affect the copula (be it *so*, or let it be *so*) is called the imperative mood, of which there are these three varieties. Wilkins's *Real Character*, part iii c. 5. The same distinction is observed by Mr. Harris, who makes the imperative mood a species of the requisitive when applied to inferiors; but when pertaining to equals, or superiors, it is a precative or optative. *Hermes*, p. 144. ed. 2d. See **MOOD**.

In Hebrew, and other oriental languages, the future tense has frequently an imperative signification.

IMPERATOR, among the *Romans*, a title of honour given to generals after a victory; first by the acclamations of the soldiers, and afterwards confirmed by the senate. See **EMPEROR**.

IMPERATORIA, in *Botany*, is supposed to have derived its name from its reputed imperial virtues in medicine, whence also it has obtained with our herbalists the appella-

tion of "Masterwort."—Linn. Gen. 143. Schreb. 153. Willd. Sp. Pl. v. 1. 1458. Mart. Mill. Dict. v. 2. Sm. Fl. Brit. 327. Ait. Hort. Kew. v. 1. 358. Just. 220. Lamarck Dict. v. 3. 242. Illustr. t. 199. Gært. t. 21. —Class and order, *Pentandria Digynia*. Nat. Ord. *Umbellata*, Linn. *Umbellifera*, Just.

Gen. Ch. Umbel universal flat-spreading; partial unequal. *Invol. universal* none; *partial* very slender, with one or two leaflets, almost as long as the umbel. *Perianth proper* obsolete. *Cor. universal* uniform; *florets* all fertile: *partial*. Petals five, inflex-emarginate, nearly equal. *Stam.* Filaments five, capillary; anthers roundish. *Pistl.* Germen inferior; styles two, reflexed; stigmas obtuse. *Peric.* none. Fruit roundish, compressed; gibbose in the middle, margined. *Seeds* two, ovate, marked on one side with two furrows, surrounded by a broad margin.

Ess. Ch. General Involucrum none. Flowers all fertile. Petals inflexed, notched, nearly equal. Fruit roundish, compressed, bordered, swelling in the middle, with three ribs. Umbels flat.

1. I. *Astruthium*. Masterwort.—Linn. Sp. Pl. 371. Engl. Bot. t. 1380. Woodv. Med. Bot. t. 35.—Found by Mr. Lightfoot on the banks of the Clyde, and this is the only authority for its being added to the list of British plants.—It flowers in June.—*Root* perennial, tuberous, acrid and aromatic. *Stems* erect, about a foot and a half high, mostly simple, round, striated, smooth. *Leaves* twice ternate, smooth, acutely serrated and cut. *Umbels* terminal, of many rays, flattish, smooth. *Flowers* white or bluish-coloured, regular. *Fruit* emarginate at the top and base, smooth.

Masterwort has long been supposed a sovereign remedy against poison. Gerarde says it is "also singular against all corrupt and naughty aire and infection of the pestilence—cures pestilential carbuncles and botches—cold fits of agues—droply—dissolves all ventosities or windiness of the stomach and other parts—and greatly helpeth such as have taken great squats, bruises, or falls from some high place." This account of its virtues may lead us to suppose that this plant was considered by ancient botanists as the master-key of pharmacy.—At present it is occasionally used as an aromatic, but is of course superseded by many plants which have that property in a superior degree.

IMPERATRIX, a name given by some authors to the *Meum* or Spignel.

IMPERFECT CONSONANCES, in *Music*. Sometimes the thirds and the sixths are, though improperly, called imperfect consonances, because they are of two kinds, major and minor of each: while the fifth and fourth are said by these writers to be perfect, because they never change; which, however, is not correct, since there is the minor, false, or flat fifth, or semidiapente, and the major, false, or sharp fourth, or tritone; and thus every note of the scale has its major and minor, as well as the thirds and sixths. (See **INTERVAL**.) Dr. Callcott recommends some further distinctions on this subject in his *Musical Grammar*, art. 189, &c.

IMPERFECT Chords, or incomplete, are such as do not include all their accessory sounds.

IMPERFECT Instruments, are those with a fixed number of notes or intervals in the octave, (less than 44; according to Maxwell,) as the common keyed-instruments with 12 sounds, flutes, oboes, bassoons, &c. and, in general, all such whereon the performer has it not in his power to vary his sounds, so as to produce perfect chords with other notes struck or sounded at the same time, a thing impossible throughout the 12 keys major and 12 minor, on any instrument which cannot command 44 different sounds with-

in the octave, according to Mr. Maxwell, or 60 at the least, according to Mr. Henry Litton. The imperfect instruments in common use, are incapable of executing any tempered system of intervals except the isofonic, or equal temperament, so that every key therein shall be alike harmonious, because wolves, bearing-notes, or intervals very different to what they are intended to be must occur, or be substituted for the proper ones, unless 21 sounds at least can be introduced into the octave, as was done by Dr. R. Smith on his harpsichords, or 24 notes, as is done on Mr. D'Loeschman's patent pianofortes and organs for harmonizing 33 keys: we have already, under the article *HAWKÉ'S Temperament*, pointed out the impossibility of the 17 notes on that gentleman's patent instruments performing without wolves in more than 23 keys, while some of them are not the most usual, or those which first arise in the regular order of modulation: all these of 12, 14, at the Temple, 16 at the Foundling organ, 17, 21 and 24 notes, are imperfect instruments, and incapable of yielding perfect or untempered harmony in any piece of music. See PERFECT INSTRUMENTS.

IMPERFECT *Intervals*, are such as have not a ratio expressible in small or whole numbers: thus $\frac{3}{4}$, or the fourth, is a perfect interval, but $\frac{3 \cdot 2}{4 \cdot 3}$, or $\frac{32}{43}$, is not a perfect interval;

but the false, or trumpet fourth, $\frac{3 \cdot 2}{4 \cdot 5}$, or $\frac{32}{45}$, is also an imperfect interval, the tritone. The tempered intervals, adapted to imperfect instruments, are imperfect intervals, whether such deviate one or more of some small interval from perfection, as $\frac{243}{320}$ the comma deficient fourth, $\frac{2187}{3200}$ the

double comma deficient fifth, $\frac{16384}{19683}$ the schisma-excessive minor third, &c.; or deviate any fractional part or parts of a small interval from perfection, as $1 \div \sqrt[4]{}$, a fifth flattened, $\frac{1}{4}$ th of the major comma for the mean tone temperament, $\sqrt[3]{\frac{1}{10}}$ a fifth flattened $\frac{1}{3}$ d of the major comma for a system with perfect major sixths, &c.

IMPERFECT *Plants*, among *Botanists*, are such as either really want flower and seed, or are supposed to want them; no flower or seed having been discovered in the greater part of those plants included in this class by the botanical writers, at the time when they were thus denominated. See PLANTS.

IMPERFECT *Mixts*. See MIXT.

IMPERFECT *Numbers*, in *Arithmetic*. See NUMBERS.

IMPERFECT *Tense*, in *Grammar*, signifies an indefinite time between the present and the past; as, *I taught, I heard*. The imperfect was sometimes employed by the ancients to denote what is usual and customary: thus *surgebat* and *scribebat* signify not only *he was rising, he was writing*, but upon occasion they signify, *he USED to rise, he USED to write*. The reason of this is, that whatever is customary, must be something which has been frequently repeated; but what has been frequently repeated must require an extension of time past. It was also used by the ancients, in which they have been followed by the moderns, in a suspensive kind of inscription; as *Ἀπέλλης ἐποίησεν, Apelles faciebat*, but not *ἐποίησεν, or fecit*; by which use of the imperfect they avoided the shew of ignorance, and had prepared an apology in case of censure, by saying that the work was *once indeed in hand*,

without pretending that *it was ever finished*. Harris's *Hermes*, p. 136, &c. See TENSE.

IMPERFETTO, *Ital.* imperfect. See INTERVAL.

IMPERFORATE ANUS. It sometimes happens, that infants are born with the anus imperforate, and when the defect is not soon discovered, and some endeavour made to obviate it, the consequences are, in a short time, almost invariably fatal. The afflicted infant is restless, cries much, and suffers a frequent and distressing inclination to empty the rectum. In the fits of suffering, the child's face swells, and its eyes become red, and more or less protruded from their sockets. At length the belly is affected with a general swelling and tenderness, and death takes place in four or five days, either from the inflammatory and gangrenous mischief within the abdomen, or from the convulsions excited. It is a very curious circumstance, however, that there are cases on record, where children have lived several weeks, and even years, with an imperforate anus, the excrement having been discharged all such time by the mouth. (See *Journal de Médecine*, ann. 1770, p. 510, and tom. 8. p. 60.) Such instances, indeed, are exceedingly uncommon; but they are important, inasmuch as they tend to evince, that the operation usually performed for the relief of an imperforate anus, may be attempted, even at a late period, with a considerable chance of success. When an infant labours under the above-mentioned complaints, and the meconium does not come away, the practitioner is naturally led to examine the appearance of the anus, and thus the nature of the case is detected.

There are various kinds of imperforate anus. Sometimes the termination of the rectum is shut up by a preternatural membrane, or thin portion of skin. This is the most common, and, at the same time, the most favourable case, both the diagnosis and treatment being free from all difficulty. The membrane, shutting up the anus, is plainly visible to the practitioner immediately upon his making the requisite examination, and, occasionally, it is so distended with the confined feces, that it projects from the anus in the form of a pouch or sac. Here the proper method is to divide the membrane with a bistoury, and if the part composing the obstruction is thick, the incision may be made in a crucial shape, and four angles, or flaps, cut away with the knife or scissors. Dressings and bandages are not required after the operation, the exit of the excrement and air prevents a closure of the opening; and it seldom happens that any symptoms arise deserving particular notice.

Sometimes the lower end of the rectum is properly formed and open; but the intestine is inwardly closed at a greater or lesser distance above the anus. Such imperviousness is also occasionally produced by a preternatural membrane; though, in some cases, it is the effect of an adhesion of the sides of the bowel together, there being, in fact, a total obliteration of the cavity of the intestine at the part which is impervious. When the obstruction happens to be situated a very little above the anus, it may easily be felt by the finger; but when it occurs so high up, that the finger cannot reach it, the case may be set down as irremediable. That a part of the rectum is impervious, may be inferred from the infant's having no stools, and from the immediate discharge of clysters, whenever given to promote the passage of the excrement. In this circumstance, how can we venture to introduce any instrument, with a design of perforating the obstruction, without having the guidance of the finger, and without being able to know whether we are piercing the part composing the obstruction, or wounding the side of the bowel? Whether, in so hopeless a case, it is proper to attempt the formation of an artificial anus, will be presently considered.

When

IMPERFORATE ANUS.

When the obstruction can be felt with the finger an operation is admissible, and it may be most conveniently performed with the pharyngotomus introduced on the finger. A large curved trocar might also answer the purpose; but the operation is neither free from difficulty nor danger. In the event of the part of the intestine above the obstruction being greatly distended with feces, a kind of fluctuation is sometimes not only perceptible above the impervious place, but likewise through the coats of the bowel at the circumference of the obstruction; and in this case it is often exceedingly difficult to distinguish the exact situation into which the instrument ought to be pushed, so as to form a communication between the upper and lower portion of the intestine. Should the puncture be made in a wrong direction, the side of the bowel would be wounded, and a fatal extravasation of its contents into the pelvis be the consequence. A mistake of this sort would be the most difficult to avoid, were the intestines closed by a membrane of a thickish firm texture; for then the fluctuation of the fecal matter would be less plain, just in the situation of the obstruction, than at the circumference. On the other hand, when the membrane, rendering the bowel impervious, is very thin, the fluctuation of the intestinal matter may be easily felt through it, and the practitioner has less difficulty in determining where the perforation ought to be made. When the imperviousness of the bowel is the effect of an accretion of its sides together, and the intestinal canal is quite annihilated at the part, the fluctuation of the intestinal matter is less plain in the situation of the obstruction than at the sides of it, and indeed may be quite imperceptible. In all such cases the operation cannot fail to be attended with considerable peril, as every thing depends upon the direction in which the instrument is introduced, which direction should be such as will open a communication between the upper and lower portions of the intestine, and can only be ascertained with difficulty. When the membrane that has been pierced is thin, no particular dressings are needed after the operation, the opening being more likely to be widened by the passage of the intestinal contents than to close again; but if the puncture has been made through a thick substance, surgical authors recommend a tent, or piece of a thick bougie, to be occasionally worn for some time after the operation, in order to prevent the opening from becoming shut up again.

In certain examples not the slightest appearance nor vestige of an anus can be discovered, the rectum terminating in a cul-de-sac. Here the operation is attended with several difficulties, and the event is therefore generally fatal. The greater or lesser distance of the cul-de-sac extremity of the rectum from the external integuments, however, is a circumstance making a material difference in the degree of hazard. The practitioner cannot ascertain this point unless the contents of the bowel happen to lie so near the skin as to communicate to the fingers of an examiner the feel of fluctuation. When this is the case the operation is easy of performance, and the consequences for the most part successful. The further the intestine is situated from the integuments, the smaller is the chance of being able to save the infant's life. When the end of the bowel lies very high up it may be impossible to reach and open it with a cutting instrument. Sometimes the rectum is entirely wanting, and the colon terminates in a cul-de-sac.

A more favourable case is met with where nature indicates the place in which the opening of the anus ought to be, by a red depression, small folds and wrinkles, or some such appearance. But, in many instances, the part is every where so even and uniform, that there is nothing to point

out where the incision ought to be made. Here the knowledge of anatomy is the only light to the practitioner. He makes the first cut through the skin, between the os coccygis and the beginning of the raphe of the perineum. He is to recollect, however, that in new-born infants the lower end of the rectum is not so close to the os coccygis as in adult subjects. An interspace, of nearly an inch, ought therefore to be left between the point of this bone and the posterior extremity of the incision. In male infants it is as well to introduce a catheter into the bladder before the operation. By this means the surgeon will not only be enabled to determine with greater precision the place of the first incision, but also to avoid the urethra as the wound is gradually made deeper. Surgical writers think it advantageous to make a crucial incision in the skin and subjacent cellular substance.

The first wound is to be gradually rendered deeper, care being taken to direct each stroke of the knife with the forefinger of the left hand. The principal objects in view are to avoid the urethra and bladder, and find out the end of the rectum. An injury of the urethra may easily be avoided; when care is taken to introduce a catheter before the operation, and to feel the instrument repeatedly with the left hand during the employment of the knife. Sometimes the rectum is so distended with its contents as to press upon the neck of the bladder, and occasion a retention of urine. Here the dilated bladder might easily be wounded, were the surgeon, before the operation, to neglect to introduce a catheter, and draw off the urine. The surgeon is occasionally directed to the cul-de-sac termination of the bowel by the fluctuation of the accumulated feces; sometimes by a certain hardness which he perceives at the bottom of the wound; and which is produced by the sphincter muscle in a state of contraction. When there are no marks of this kind to guide him, nothing will be of any use to him except anatomical knowledge, and the rule always to incline the incision towards the os sacrum, where no important parts can be injured, instead of forwards, where the bladder, or vagina, is situated.

At length, the surgeon either succeeds in finding out the end of the intestine, or else his endeavours prove ineffectual, although the wound has already been carried to a reasonable depth. When the extremity of the bowel is found, the infant is indeed relieved for the present; but it is far from being out of danger. Experience proves that the majority of children die after this operation. The causes of this fact may be various; but, probably, it often happens that the side of the intestine is cut, and that an extravasation of the intestinal matter in the pelvis ensues. In the event of the bowel being found, the surgeon can do nothing more than make as capacious an opening in it as can be done with safety, promote the evacuation of the feces by gentle aperients, and place a tent in the wound in order to keep the new outlet pervious. The tent is always productive of irritation and pain, and consequently it should constantly be as soft and flexible as possible. A flexible tube is by no means an eligible instrument for introduction; for, if it should be too small, the stools would not pass through it; and, if too large, it would give rise to pain and inflammation. Even when the operation is followed by favourable consequences, an involuntary discharge of the feces frequently continues. Cases, however, do occur where the cure is in every respect perfect, the infant emptying its bowels naturally, and under the controul of the will.

When the surgeon has carried the incision to a considerable depth, and cannot meet with the bowel, ought he to venture to cut still more deeply? The attempt, it must be confessed,

confessed, is attended with some danger, and is uncertain in its consequences; but as death is inevitable if no outlet for the feces can be procured, circumstances seem to justify such an endeavour to preserve the child. The occasional success, also, which has attended the proceeding, further corroborates its propriety. After extending the incision to the depth of two inches, without finding the intestine, a trocar, introduced an inch more deeply, has successfully opened the bowel. If, in such a case, the surgeon were to use a trocar, with a slit cannula, the puncture might be immediately dilated with a bistoury passed into the tube.

When the rectum cannot be found and opened in the foregoing manner, Littre has proposed making an opening into the abdomen near the left groin, dividing the sigmoid flexure of the colon, attaching the opened portion to the external wound, and thus establishing an artificial anus. This operation has not only been found very practicable upon the dead subject, but has actually been performed by Sabatier, Lehrbuch, &c. upon living infants with the happiest consequences. It is not to be dissembled, however, that the event is exceedingly doubtful, especially as the practitioner can never know beforehand how far the large intestines may be closed, or where the cul-de-sac extremity lies; but, upon the whole, the operation certainly appears to be warrantable, not merely on account of the hopeless condition of the infant, but because the attempt has unquestionably been known to succeed.

Calisen has proposed searching for the descending colon in the region of the loins. For this purpose he recommends an incision to be made on the left side of the spine, between the false ribs and the crista of the os ilium, upon the front edge of the quadratus lumborum muscle. It must be acknowledged, that in this situation there is more chance of finding the intestinal canal pervious; and that here an apparatus for lessening the inconveniences of an artificial anus admits of being more conveniently applied. But, all things considered, this operation is liable to more objections than the method proposed by M. Littre, which has likewise the important recommendation of having already proved successful.

Sometimes, besides the anus being imperforate, the large intestine has a preternatural opening into the urethra, or bladder. In female infants such a malformation is less pernicious in its consequences than in male children. In the former the meatus urinarius is short and dilatible, and the feces find a ready outlet; in the latter death usually ensues, unless an opening be speedily made for the passage of the excrement in the natural situation of the anus. Even when this has been executed, all the danger is not over; for it does not follow, as a matter of course, that the preternatural opening in the gut will close, because a new outlet has been formed. However, there are cases on record proving that this beneficial change may happen. Sometimes the preternatural opening in the intestinal canal is situated in the vagina or at the navel, in which circumstances external means may be employed to promote the closure. There are likewise cases recorded by writers, where women have discharged their feces, during the whole of their lives, through the vagina, or bladder.

In certain instances the anus is not closed, but only very small. This state is sometimes an original malformation. In other examples it arises after birth from a variety of causes, as after the operation for the fistula in ano, &c. The case may be cured, or at least relieved, by dilating the opening on each side with a bistoury, and employing tents.

Perhaps the most important case of impervious rectum is that which proceeds from a scirrhus induration and thicken-

ing of the coats of that intestine. Such disease is mostly seen in persons rather advanced in life, and more frequently in women than men. It ordinarily begins in a slow and insidious manner, producing at first several complaints, which are apt to be imputed to other causes, especially to piles. The case in the early stage is, therefore, in general not much understood. The patient feels an inclination to go to stool; but he voids little, and what comes away passes with great difficulty. He usually suffers shooting pains about the rectum; and the agony is often so severe, particularly when the patient is at stool, as to induce fainting. The excrement which comes away is remarkably thin. As the disease advances, the rectum at length becomes quite impervious, and a misere then comes on, which commonly proves fatal, as a free passage for the feces can seldom be procured again with sufficient celerity. The induration occasionally ulcerates, and the neighbouring parts are destroyed in various ways.

The disease may be detected by proper examination, in which the rectum will be found to be hard and contracted. Sometimes, on its inner surface, hard lumps and furrows can be felt. The more ancient and considerable the hardness is, the more difficult is the cure. The colon is liable to be thus rendered impervious, in which circumstance the case is fatal. (See Mem. of the Med. Society of London, vol. ii.) The coats of the rectum have been found an inch thick, and quite cartilaginous.

Tents are the principal means of relieving the scirrhus-contracted rectum, just in the same manner as bougies are calculated for the cure of strictures in the urethra. Large bougies, made for the purpose, might also answer best for the dilatation of the rectum. But whatever instrument is used, its size must be gradually augmented. The passage of the stools is every day to be facilitated with clysters. Several kinds of medicines have been tried internally, as cicuta, mercury, burnt sponge, &c. Default found the mineral alkali very efficacious, so much so, that he sometimes effected a complete cure in the space of from three to six months, even though the disease had fallen into the ulcerated state. The medicine, however, must always be continued, till the disease is entirely removed; for when the treatment is discontinued too soon, the disorder is apt to recur. Sometimes it is necessary to use the knife, that is, when an indurated transverse fold is formed in the rectum, so as both to hinder the passage of the excrement, and the introduction of the tent or bougie. Richter's Anfangsgründe der Wund-arzneykunst, Band 6. Kapitel 19.

IMPERFORATE *Hymen*. See VAGINA *Imperforate*.

IMPERFORATE *Iris*. See PUPIL, *Closure of*.

IMPERFORATE *Meatus Auditorius*. See MEATUS *Auditorius*.

IMPERIAL, something belonging to an emperor, or empire.

Thus we say, his imperial majesty, the imperial crown, imperial medals, the imperial chamber.

IMPERIAL *Cities*, in Germany, are those which own no other head but the emperor.

These are a kind of little commonwealths; the chief magistrate whereof does homage to the emperor, and pays him the Roman month; but in other respects, and in the administration of justice, the magistrate is sovereign. The imperial cities have a right of coining money, and of keeping forces, and fortified places: their deputies assist at the imperial diets, where they are divided into two branches; that of the Rhine, and that of Suabia. There were formerly twenty-two in the former, and thirty-seven in the latter;

latter; but there are now only forty-nine in all; thirteen belonging to the former, and thirty-six to the latter.

IMPERIAL Diet, is an assembly or convention of all the states of the empire. See DIET.

IMPERIAL Table, in *Surveying*, an instrument made of brass, with a box and needle, staff, &c. used in measuring land.

IMPERIALE, in *Geography*, a town of Chili, situated on a river which runs into the Pacific ocean; destroyed by the Indians; 60 miles N. of Valdivia.

IMPERII RECESSUS. See RECESSUS Imperii.

IMPERSONAL VERB, in *Grammar*, is such an one, as is only used in the third person singular; as *oportet, licet, &c.* Every verb, says the ingenious Mr. Harris, whether active or passive, has in language a necessary reference to some noun for its nominative case; and the doctrine of impersonal verbs has been justly rejected by the best grammarians, both ancient and modern. *Hermes*, p. 175.

IMPERVIOUS, a thing not to be pervaded, or passed through; either by reason of the closeness of its pores, or the particular configuration of its parts.

IMPETIGO, in *Medicine*, a term which has been employed in many indefinite significations by writers in the Latin language. Pliny uses it as synonymous with the *Lichen* of the Greeks (*Nat. Hist. lib. xx. cap. 1.*), in which he is followed by the majority; he is, however, inconsistent with himself, since, on other occasions, he employs the term to express other diseases. The definition which Celsus gives of *Impetigo*, does not in any respect correspond with the description of the *Lichenes* given by the Greeks: he includes these distinctly and correctly under the head of *Papula*; and his *Impetigo*, as Sennertus remarks, is the *Lepra* of the Greeks (*Cels. de Medicinâ, lib. v. cap. 28.* Sennert. *Med. Pract. lib. v. cap. 30.* Willan on Cutaneous Diseases, part i. p. 38.) Sauvages and Cullen have adopted the term *impetigo* for the title of one of the orders in their respective systems of nosology, in the classes of *Cachexia*. The *Impetiginæ*, in Dr. Cullen's system, include those species of cachectic diseases, which particularly discolour and deform the skin and external parts of the body; namely, scrofula, syphilis, scurvy, elephantiasis, leprosy, jaundice, &c. (Class IV. Ord. III.) The *Impetiginæ* of Sauvages include only those chronic and commonly contagious diseases which are accompanied by clustered swellings, ulcerations, crusts, &c.; viz. syphilis, scurvy, elephantiasis, lepra, scabies, and tinea. Class X. Ord. V.

Dr. Willan confines the use of the term *impetigo*, as a genus to a pustular eruption, commonly occurring in patches, and discharging a fluid, which, under one or two of its varieties, forms crusts or scabs on the surface; the running tetter of authors. But as the part of his treatise of cutaneous diseases, which will contain the description of *impetigo*, is not yet published, we are unable to enter farther into his views of the subject at present.

IMPETRATION, the act of obtaining any thing by request or prayer.

IMPETRATION was more particularly used in our statutes for the pre-obtaining of benefices and church offices in England from the court of Rome, which did belong to the disposal of the king, and other lay patrons of the realm; the penalty whereof is the same with that of provisors, 25 E. III. See PROVISOR.

IMPETUS, in *Mechanics*. See FORCE, MOMENTUM, and MOTION.

IMPETUS, *Paracentric*. See PARACENTRIC.

IMPEY'S ISLAND, in *Geography*, a small island in the Mergui Archipelago. N. lat. 10° 22'.

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IMPEZZATO, *Ital.* See EPAIS and SPISSUS.

IMPING, in *Falconry*, the inserting a feather in the wing of a hawk, in the place of one that is broken.

IMPIRA, in *Geography*, a town of South America, in the province of Cordova; 90 miles S. of Cordova.

IMPLANTATION. See TRANSPLANTATION.

IMPLEAD, to sue, or prosecute by course of law. See PLEADING.

IMPLEMENTS, formed either from the Latin, *implere, to fill up*; or from the French, *employer, to employ*; is used for all things necessary for a trade, or the furniture of a household.

In this sense we frequently find it used in wills, and conveyances of moveables.

IMPLEMENT, in *Agriculture*, a term applied to any sort of tool or instrument by which any kind of work is executed.

IMPLEMENTS of Husbandry, the several different kinds of tools or machinery by which the various sorts of labour and operations of the art are performed. They consist principally of spades, ploughs, harrows, drags, drills, hoes, mills, carts, waggons, &c. See these different heads.

In the formation and construction of all sorts of tools and machinery for the uses of the farmer, the principal aim should be that of rendering the work they are to perform more cheap, easy, expeditious, and complete, by having them perfectly suited to the operations for which they are intended, and at the same time not too weighty, while they possess sufficient degrees of strength for the different purposes to which they may be applied. It is conceived by a late writer on rural affairs, that there is probably no sort of implements that admits of greater improvement than those employed in husbandry, on the principle of lessening weight, without materially diminishing the strength. It is strongly observed, that "every one knows that, if a beam of any length be made of equal thickness throughout its whole length, and a weight sufficient laid upon it, it will inevitably break in the middle, and never at either of the ends; yet, unless it be in the poles of a sedan chair, an instance can scarcely be recollected, in which weight has been diminished on this principle. On the contrary, it is not at all unusual, in the construction of such implements, to see the thickness diminished nearly one-half at the very weakest place, by means of a mortise cut out of it there, while its thickness in other parts is four times greater than would enable it to bear an equal burden. No attention is paid in placing the wood in that position wherein it would be best able to resist the pressure to which it must necessarily be subjected; although it is very well known that the same quantity of materials may be made to bear in one position above ten times as much as it could do in another. It is well known that mortises weaken the wood to an astonishing degree when they are injudiciously placed; yet it is no uncommon thing to see two cross-mortises, each of them twice the size that in any case could have been necessary, made through a beam, perhaps at the very weakest part of it, just as accident may direct, without even so much as an attempt to vary their position, far less to wholly avoid them, which in many cases might be effected without the least inconvenience or impropriety.

It is well understood, that a small brace, judiciously made use of, may greatly augment the strength without adding to the weight of an implement; yet contrivances of this nature, which are obvious to the merest tyro in mechanics, seem to be totally disregarded: far less do the constructors of such tools think of adopting new devices of this description, which a very moderate degree of ingenuity would readily point out. The importance and advantages of having every part firm and compact in a tool which is to be subjected to

jolting and shaking, are universally recognized; yet, from the most trifling considerations, this principle may be seen departed from, and loads of superfluous materials added in vain to supply the defects that are in this way produced. And these remarks do not apply to one set or sort of implements only, but almost to every common tool or machine that is employed in the art of husbandry.

It is obvious, that these principles and circumstances, however evident in themselves, have not only been little attended to by the cultivators of the soil, but in a great measure overlooked by those who have been chiefly engaged in the making of tools of this description. It can scarcely have escaped observation that, in most of the districts of the country, though numerous useful tools and machines have been lately invented and improved, there are still various kinds to be met with, which are not only extremely inconvenient from their clumsiness, but employed with great disadvantage in consequence of their heaviness. A difference, however, in regard to strength, as well as other objects, becomes necessary sometimes from the nature of the situation and other circumstances, and by these the mechanic must frequently be directed in constructing these sorts of tools. And as implements of this kind are generally made use of by labourers who have but little knowledge of the nature, power, and operation of them, they should constantly be constructed on the most obvious and simple principles, as well as in such modes, and of such materials, as that they may be afforded at an easy rate; as where they are charged at a high price, it must of necessity operate greatly against their introduction into general use.

The descriptions of the several different implements and machines that are capable of being employed with advantage in the various departments of agriculture, may be seen under the different heads to which they properly belong.

IMPLEX ACTION. See ACTION.

IMPLICATION, in *Law*, is where the law doth imply something that is not declared between parties in their deeds and agreement; and when our law giveth any thing to a man, it giveth implicitly whatever is necessary for the enjoying the same. The want of words may be helped in some cases by implication; and so one word or thing, or one estate given, shall be implied by another: and there is an implication in wills and devises of land, whereby estates are gained.

IMPLICIT, derived from *in*, and *plico*, *I fold*; something tacitly comprized, or understood: that is, contained in a discourse, clause, or proposition, not in express terms, but only by induction and consequence.

IMPLICIT Faith. See FAITH.

IMPLIED Condition, Contract, Malice, and Warranty. See the substantives.

IMPLIED Sound, in *Music*, is a term used by Mr. Holder in his "Essay towards a rational System of Music," p. 350. 362. 370. &c., to express what he thought to be the grave harmonic of certain sounds, but owing to a false rule by which he calculated, many of these are no such things as the Tartinian sounds he supposed them to be, and many parts of the fanciful theory which he raises therefrom, are, as might be expected, at variance with all established facts and rules in harmonics. See our article *GRAVE Harmonic* and *HOLDER's Temperament* of the musical scale.

IMPLY a *contradiction*, a phrase used among philosophers in speaking of the object of divine omnipotence.

God can do every thing that does not imply a contradiction proceeding from God: by which is not meant a relation of the action to the executive power of God, but a relation to the other attributes and simple perfections of God.

IMPONDERABLE SUBSTANCES, in *Chemistry*. Instead

of considering repulsion as a general agency or force; philosophers, finding that the cause producing it is capable of being communicated from one body to another, and that some of the phenomena of its transition indicate it to be a distinct principle, have been disposed to regard it as a peculiar subtle kind of matter, the same with that to which the phenomena of heat have been referred, and which, in the modern chemical nomenclature, has been denominated *Caloric*, which see. Though the materiality of this power has not been demonstrated, the supposition has much probability, and accords nearly with the phenomena. It may be regarded as the cause of repulsion, whatever be the nature of this power, whether it be regarded as a quality of bodies, a general force, or a distinct kind of matter; the same principle which produces the phenomena of heat is undoubtedly that which counteracts the attractions exerted between the particles of bodies. The connection of light and heat has led to the opinion of their identity; it is well ascertained that the particles of light are mutually repellent. From heat and light there is a natural transition to the agent which gives rise to the phenomena of *Electricity* and *Galvanism*, which see. They all possess one common character, which is that of not being subject to the attraction of gravitation, or at least their gravity is incapable of being appreciated: hence they are distinguished by the name of "imponderable substances." They possess the greatest subtilty or tenuity: we cannot easily insulate or obtain them in a separate state of existence: they are observed only in states of combination, or in their rapid transition from one body to another: we can scarcely measure their force, and we are unable to trace their particular combinations, or consider them as essential constituent principles of any compound.

IMPORTANCE of *Action*, in *Poetry*. See ACTION.

IMPORTATION, the act of importing or bringing merchandize from foreign countries, in contradistinction to exportation.

IMPOSITION of Hands, an ecclesiastical action, by which a bishop lays his hands on the head of a person, in ordination, confirmation, or in uttering a blessing. This practice is also frequently observed by the Dissenters at the ordination of their ministers, when all the ministers present place their hands on the head of him whom they are ordaining, while one of them prays for a blessing on him and his future labours. This some of them retain as an ancient practice, justified by the example of the apostles, when no extraordinary gifts were conveyed. However, they are not agreed as to the propriety of this ceremony; nor do they consider it as an essential part of ordination.

Imposition of hands was a Jewish ceremony, introduced, not by any divine authority, but by custom: it being the practice among those people, whenever they prayed to God for any person, to lay their hands on his head.

Our Saviour observed the same custom, both when he conferred his blessing on children, and when he cured the sick; adding prayer to the ceremony. The apostles likewise laid hands on those upon whom they bestowed the Holy Ghost. The priests observed the same custom when any one was received into their body. And the apostles themselves underwent the imposition of hands afresh, every time they entered upon any new design. In the ancient church, imposition of hands was even practised on persons when they married; which custom the Abyssinians still observe.

But this term, which, in its original signification, is general, is now restrained, by custom, to that imposition which is practised at ordination. Spanheim has written a treatise "De Impositione Manuum;" and Tribenhorius and Braunius have done the same. See ORDINATION.

IMPOSITION of Tonnage, &c. See DUTY, &c.

IMPOSSIBLE, that which is not possible, or which cannot be done or effected. A proposition is said to be impossible when it contains two ideas which mutually destroy each other, and which can neither be conceived, nor united together in the mind.

Thus it is impossible, that a circle should be a square; because we conceive clearly, that squareness and roundness destroy each other by the contrariety of their figure.

There are two kinds of impossibilities, *physical* and *moral*. Thus,

Physical impossibility, is that which is contrary to the laws of nature. A thing is *morally* impossible, when of its own nature it is possible, but yet is attended with such difficulties, as that, all things considered, it appears impossible.

Thus it is morally impossible, that all men should be virtuous; or that a man should throw the same number with three dice a hundred times successively.

A thing which is impossible in law, is the same with a thing impossible in nature: and if any thing in a bond or deed be impossible to be done, such deed, &c. is void. 21 Car. I. B. R.

IMPOSSIBLE Condition, in Law. See CONDITION.

IMPOSSIBLE Forms of Equations, in the Indeterminate Analysis, are those that will admit of no rational solution, such as $2x^2 \pm 3y^2 = z^2$; $3x^3 \pm 7y^3 = z^3$; $3x^4 \pm 7y^4 = z^4$; &c.

Possible Forms.

$$\left. \begin{array}{l} 2n, 2n + 1 \\ 3n, 3n + 1 \\ 5n, 5n \pm 1 \\ 7n, 7n + 1, 7n + 2, 7n + 4 \\ 11n, 11n + 1, 11n + 4, 11n + 5 \\ 11n + 9, 11n + 3 \end{array} \right\}$$

Impossible Forms.

$$\left. \begin{array}{l} 3n + 2 \\ 5n + 2, 5n + 3 \\ 7n + 3, 7n + 5, 7n + 6 \\ 11n + 2, 11n + 6, 11n + 7 \\ 11n + 8, 11n + 10 \end{array} \right\}$$

Now by means of these linear forms, we readily obtain those of the quadratic forms, such as $2x^2 \pm 3y^2 = z^2$; which is demonstrated to be impossible, as follows.

First, the three indeterminates $x, y,$ and $z,$ may be considered as being prime to each other, for if they have any common measure, as $x = \phi x', y = \phi y',$ and $z = \phi z',$ the whole equation may be divided by that common measure, and thus reduced to another, in which the indeterminates are prime to each other; and therefore if an equation be possible, when the terms have a common measure, it is also possible when divided by it, and conversely if an equation be impossible when the terms are prime to each other, it is also impossible in all other cases. Assuming therefore, that in the equation $2x^2 \pm 3y^2 = z^2,$ $x, y,$ and $z,$ are prime to each other, we may proceed as follows. Whatever is the form of $y^2;$ $3y^2$ is divisible by 3, and is therefore of the form $3n;$ and x^2 must be of one of the

forms $3n,$ or $3n + 1;$ these being the only possible forms of squares numbers to modulus 3. But if x be of the form $3n,$ we shall have $2(3n) \pm 3n = z^2,$ of the form $3n,$ that is, z and x are both of the form $3n,$ which is contrary to the supposition, since $x, y,$ and z are all three prime to each other; therefore x^2 cannot be of the form $3n;$ let it then be of the form $3n + 1,$ and the equation becomes $2(3n + 1) \pm 3n = z^2,$ of the form $3n + 2;$ but $3n + 2$ is an impossible form for squares, therefore z^2 cannot be of the form $3n + 2,$ and consequently the proposed equation is impossible.

And we should have been led to the same result, if we had considered the equation under the more general form, $(3p + 2)x^2 \pm 3qy^2 = z^2;$ that is, all equations falling under this form are impossible; hence all the following equations are readily obtained.

$$\left. \begin{array}{l} 2x^2 \pm 3y^2 = z^2 \\ 5x^2 \pm 3y^2 = z^2 \\ 8x^2 \pm 3y^2 = z^2 \\ 11x^2 \pm 3y^2 = z^2 \\ \&c. \quad \&c. \end{array} \right\} \text{Impossible forms of equations.}$$

$$\left\{ \begin{array}{l} 2x^2 \pm 6y^2 = z^2 \\ 5x^2 \pm 6y^2 = z^2 \\ 8x^2 \pm 6y^2 = z^2 \\ 11x^2 \pm 6y^2 = z^2 \\ \&c. \quad \&c. \end{array} \right.$$

In the same way it may be demonstrated that the following equations are all impossible.

$$\left\{ \begin{array}{l} (5p + 2)x^2 \pm 5qy^2 = z^2 \\ (5p + 3)x^2 \pm 5qy^2 = z^2 \\ (7p + 3)x^2 \pm 7qy^2 = z^2 \\ (7p + 5)x^2 \pm 7qy^2 = z^2 \\ (7p + 6)x^2 \pm 7qy^2 = z^2 \end{array} \right. \quad \left\{ \begin{array}{l} (11p + 2)x^2 \pm 11qy^2 = z^2 \\ (11p + 6)x^2 \pm 11qy^2 = z^2 \\ (11p + 7)x^2 \pm 11qy^2 = z^2 \\ (11p + 8)x^2 \pm 11qy^2 = z^2 \\ (11p + 10)x^2 \pm 11qy^2 = z^2 \end{array} \right.$$

These formulæ might be carried on indefinitely, each of which will furnish an infinite number of impossible forms of squares to each respective modulus; only observing that the indeterminate q must always be prime to the modulus with which it enters.

The impossible forms for cubes are ascertained in a similar manner, by first finding the linear forms of them, and then combining them as in the foregoing case; thus all cubes are of one of the forms $7n, 7n + 1, \text{ or } 7n + 6$; that is, all cube numbers are either divisible by 7; or, when divided by it as far as possible, the remainder will be either 1 or 6; and hence again it follows, that $7n + 2, 7n + 3, 7n + 4, 7n + 5$, are all impossible forms of cube numbers; or if a number, when divided by 7, leaves for a remainder 2, 3, 4, or 5, that number is not a cube. Again, all cube numbers are of one of the forms $9n, \text{ or } 9n + 1$; and consequently, no number of the form $9n + 2, 9n + 3, 9n + 4, 9n + 5, 9n + 6, 9n + 7$, can be a cube, as these are all impossible forms.

The equation $2x^3 + 7y^3 = z^3$ is impossible.

Here, as in the case of squares, $x, y,$ and $z,$ may be considered as prime to each other; and, therefore, for the same reason as that stated in the foregoing demonstration, x^3 cannot be of the form $7n$, as we should then have z^3 also of the same form, which is contrary to the hypothesis, these quantities being prime to each other; so that if the equation be possible, it must be when x^3 has one of the forms $7n + 1, \text{ or } 7n + 6$, and this supposition gives $2(7n + 1) + 7n = z^3$; of the form $7n + 2$, which is an impossible form for cubes; and therefore the equation $2x^3 + 7y^3 = z^3$ is impossible.

In the same way it may be shewn, that each of the following equations is impossible.

$$\left. \begin{array}{l} 2x^3 \pm 7y^3 = z^3 \\ 3x^3 \pm 7y^3 = z^3 \\ 4x^3 \pm 7y^3 = z^3 \\ 5x^3 \pm 7y^3 = z^3 \\ 9x^3 \pm 7y^3 = z^3 \\ 10x^3 \pm 7y^3 = z^3 \end{array} \right\} \left. \begin{array}{l} 2x^3 \pm 9y^3 = z^3 \\ 3x^3 \pm 9y^3 = z^3 \\ 4x^3 \pm 9y^3 = z^3 \\ 5x^3 \pm 9y^3 = z^3 \\ 6x^3 \pm 9y^3 = z^3 \\ 7x^3 \pm 9y^3 = z^3 \end{array} \right\}$$

And these, again, may be farther generalized, by writing them

$$\left. \begin{array}{l} (7p + 2)x^3 \pm 7qy^3 \\ (7p + 3)x^3 \pm 7qy^3 \\ (7p + 4)x^3 \pm 7qy^3 \\ (7p + 5)x^3 \pm 7qy^3 \\ (7p + 9)x^3 \pm 7qy^3 \\ (7p + 10)x^3 \pm 7qy^3 \end{array} \right\} \left. \begin{array}{l} (9p + 2)x^3 \pm 9qy^3 \\ (9p + 3)x^3 \pm 9qy^3 \\ (9p + 4)x^3 \pm 9qy^3 \\ (9p + 5)x^3 \pm 9qy^3 \\ (9p + 6)x^3 \pm 9qy^3 \\ (9p + 7)x^3 \pm 9qy^3 \end{array} \right\}$$

No one of which equations can ever become equal to a cube, either in integers or fractions; provided that q be taken prime to the modulus with which it enters.

A similar mode of investigation may be pursued with all the higher powers, the only difficulty being in fixing upon a proper modulus; that is, such a number as hath the most impossible forms belonging to it, which requires a separate investigation. (See POWER.) But almost every power has some modulus that renders it expressible in three forms; thus,

| | | | | |
|---------------|-------------------------|---------|----|-----------|
| All 3d powers | are of one of the forms | $7n,$ | or | $7n + 1$ |
| 4th powers | - - - - - | $5n,$ | or | $5n + 1$ |
| 5th powers | - - - - - | $11n,$ | or | $11n + 1$ |
| 6th powers | - - - - - | $7n,$ | or | $7n + 1$ |
| 8th powers | - - - - - | $17n,$ | or | $17n + 1$ |
| 9th powers | - - - - - | $19n,$ | or | $19n + 1$ |
| 10th powers | - - - - - | $11n,$ | or | $11n + 1$ |
| &c. &c. | | &c. &c. | | |

Here the 7th power is now omitted, not being reducible to a similar form; by means of these linear forms various others, as $ax^m \pm by^m = cz^m$, may be demonstrated to be impossible.

Beside these equations, which are demonstrable to be impossible, from the linear forms of the respective powers, there are others that have been noticed by Bachet, Fermat, Lagrange, Euler, &c.; but these generally require very laborious demonstrations, of which Euler has given several descriptions in the Petersburg Acts. The Memoirs of Berlin also contain many papers on this subject by Lagrange; thus, $x^3 \pm y^3 = z^3$ is impossible, as is also $x^4 \pm y^4 = z^4$, and various others; and generally, the equation $x^n \pm y^n = z^n$ is impossible, if n be greater than 2. This proposition was first proposed by Fermat as a challenge to all the English mathematicians of his time, but the general demonstration of it was not published till very lately, viz. for November 1810, in Nicholson's Philosophical Journal, by Mr. P. Barlow, and to which the reader is referred for a complete investigation of this interesting numeral proposition. See also Barlow's "Elementary Investigations, &c."

IMPOSSIBLE Roots of Equations. See IMAGINARY ROOTS.

IMPOSSIBLE Quantity, in Algebra. See ROOT.

IMPOST, from *impono*; *I impose*, in Law, properly denotes the tribute or tax appointed by a sovereign to be paid for such merchandize as is brought into any haven in his dominions from foreign nations. See DUTY.

Impost is distinguished from *custom*, in that custom more properly signifies the duties paid to the king for goods shipped off or exported. But the two are frequently confounded together.

IMPOSTHUME, by corruption from *impostem* and *apostem*, *abscess*, a collection of matter, or pus, in any part of the body, either owing to an obstruction of the fluids in that part, which makes them change into such a matter; or to a translocation of it from some other part where it was generated. See ABSCESS.

IMPOSTORS, RELIGIOUS, are such as falsely pretend to an extraordinary commission from heaven; and who terrify and abuse the people with false denunciations of judgments. These are punishable in the temporal courts with fine, imprisonment, and infamous corporal punishment. 1. Hawk. P. C. 7.

IMPOSTS, in *Architecture*, the capitals of pillars, or pilasters, which support arches. See *Basilic* in *Plate Architecture*.

An impost, sometimes also called *chaptrel*, is a sort of little cornice, which crowns a pier, and supports the first stone, whence an arch or vault commences.

Imposts conform to their proper orders. The Tuscan is a plinth only; the Doric has two faces crowned; the Ionic has a larmier over the two faces, and its mouldings may be carved; the Corinthian and Composite have a larmier, frieze, and other mouldings.

The projecture of the impost must not exceed the naked of the pilaster. Sometimes the entablature of the order serves for the impost of the arch; and this looks very grand and stately.

The impost is a thing essential to an ordonnance; inasmuch as without it, in the place where the curve line of the arch meets with the perpendicular line of the pillar, there always seems a kind of elbow.

P, in *fig. Basilic*, represents an impost made open or flat in the middle, and bounded by fillets or ogee. This kind of impost is said to be the invention of lord Burlington, and it may be called a Burlington impost. It is enriched with a *guloic*, or

bands forming circles and intersecting each other : when there are two rows it is called a *double guloic*.

The following rules are given by some modern authors for dividing the impoſts of arches: in the Tuſcan impoſts the *facia* hath 3 parts, the *ogee* 1, the *fillet* $\frac{1}{2}$, the *corona* 3, and the *band* $1\frac{1}{2}$. For the projections, the *facia* $\frac{1}{2}$, the *ogee* two parts, *corona* 3, and the whole $3\frac{1}{2}$. In the Doric, the *frieze* 2, *fillet* $\frac{1}{2}$, *aſtragal* $\frac{3}{4}$, *cyma recta* $2\frac{1}{4}$, *fillet* $\frac{1}{4}$, *corona* 2, *ogee* 1. For the projections, *fillet* $\frac{1}{2}$, *aſtragal* 1, *corona* $2\frac{1}{2}$, and the whole $3\frac{1}{2}$.

In the Ionic, *fillet* $\frac{1}{2}$, *cyma* 4, *ovolo* $1\frac{1}{4}$, *corona* $1\frac{1}{2}$, *ogee* 1. For the projections, *cyma* $1\frac{3}{4}$, *corona* $2\frac{1}{2}$, the whole $3\frac{1}{2}$.

In the Corinthian, the *frieze* $1\frac{3}{4}$, *fillet* $\frac{1}{4}$, *aſtragal* $\frac{1}{2}$, *cyma* $2\frac{1}{4}$, *ovolo* 1, *corona* $1\frac{1}{2}$, *ogee* 1. For the projections, *fillet* $\frac{1}{4}$, *aſtragal* $\frac{3}{4}$, *cyma* $1\frac{3}{4}$, *corona* $2\frac{1}{2}$, the whole 3.

In the Composite, *frieze* 2, *fillet* $\frac{1}{2}$, *aſtragal* $\frac{3}{4}$, the *cyma* $1\frac{1}{2}$, *corona* $1\frac{1}{2}$, *ogee* 1. For the projections, *fillet* $\frac{1}{4}$, *aſtragal* $\frac{3}{4}$, *ovolo* $1\frac{1}{2}$, *cyma* $2\frac{1}{4}$, *corona* $2\frac{1}{2}$, the whole $3\frac{1}{2}$.

IMPOTENCE is more particularly uſed to denote an inability in the male to impregnate the female. This inability, however, ariſes from two very different conditions of the body; in one of which the venereal congress cannot be accompliſhed; but, in the other, although coition be effected, the ſemen is not transmitted into the uterus. Whence the noſologifts have properly diſtributed the varieties of this inability under two heads, or diſtinct diſeaſes, *viz.* *Anaphrodiſia*, or a defect of the venereal appetite and power, which is *impotency* ſtrictly ſo called; and *Dyſpermatifmus*, or an impeded and interrupted emission of the ſemen in the generative act. The various mechanical impediments which conſtitute the latter ſpecies of the diſeaſe, have been enumerated under the proper head; and conſiſt principally in diſorders of the canal of the urethra, by which the paſſage is obſtructed, or of the adjoining parts by which it is compressed; in either caſe, the exit of the ſeminal fluid is impeded, or altogether prevented.

The *anaphrodiſia*, or incapability of coition, may originate from three cauſes; to wit, from a connate or original imperfection in the conformation of the organs ſubſervient to generation, a circumſtance of very unuſual occurrence; from a paralysis affecting the muſculi erectores of the penis (*Anaphrodyſia à paralyſi*, Sauvages, claſs vi. genus xiii. ſpec. 1.); or from a too ready efflux of the ſemen, *e. g.* during the evacuation of the bowels, or at the commencement of the diſtention of the virile organ (*A. gonorrhœica*, Sauv. ſpec. 2.) Where the diſeaſe conſiſts in a malconformation of the organs, or of any of their appendages, it muſt be of courſe beyond the reach of medical relief. When it originates from palsy, affecting the erector muſcles, it is ſcarcely more favourable; ſince it is then only a part of a more general palsy affecting one ſide of the body (*hemiplegia*), or the lower extremities (*paraplegia*), or originating from injury to the ſpinal nerve, occaſioned by falls or other external violence. When the complaint is occaſioned by an extreme relaxation, as it were, of the ſecretory veſſels, inſomuch that the ſemen is poured out from the ſlighteſt irritation in their vicinity (ſuch as the paſſage of the ſtools, or the friction of the dreſs), or from the ſmalleſt determination of blood to the parts before the diſtention of the member is produced, medical treatment, with proper regimen, may be reſorted to with ſucceſs. This ſpecies of *anaphrodiſia* has been aſcribed to early maſturbation, to exceſs in venereal pleaſures, and to the occurrence of frequent gonorrhœas; but it cannot be doubted, that deſigning quacks have multiplied and exaggerated the representations

of this kind beyond the truth, and that their books have done more harm than good, by the imaginary diſorders with which they have afflicted weak and hypochondriacal men. In ſuch caſes, the ordinary means of ſtrengthening the body by light and nourishing diet, and by the uſe of the bark and ſteel, or other vegetable and mineral tonics, together with the uſe of the cold bath, muſt be reſorted to. In many of thoſe caſes, Mr. Hunter obſerves, waſhing the penis, ſcrotum, and perinæum with cold water, is often of ſervice; and to render it colder than we find it at ſome ſeaſons of the year, common ſalt may be added to it, and the parts waſhed when the ſalt is almoſt diſſolved. Hunter on the Ven. Diſeaſe, pt. iii. chap. xii.

The able and diſtinguiſhed phyſiologiſt juſt alluded to, remarked that the influence of the mind upon the operations of the body was moſt conſpicuous in reſpect to this function, and that various ſtates of apprehenſion, conſciouſneſs of impropriety, &c. ſometimes altogether prevented the performance of it: the neceſſity, therefore, of inveſtigating into the ſtate of the mind, when impotency is complained of, was ſtrongly pointed out by him from long obſervation, and illuſtrated by the following caſe: A gentleman conſulted him reſpecting the loſs of virility; but after ſome inquiry, Mr. Hunter found that the phyſical powers were not defective, and that it could only ariſe from a particular ſtate of mind: whence the mind was to be applied to for the cure; and Mr. Hunter aſſured him that he might be cured, if he could only rely on his own power of ſelf-denial. The patient was requeſted, therefore, to ſleep with the individual with whom his inability had manifeſted itſelf, having firſt promiſed himſelf to abſtain from any connection for fix nights, let his inclinations and powers be what they might. This plan produced a complete alteration in the ſtate of his mind, and was followed by a perfect and permanent cure. (Loc. cit.) See DYSPERMATISMUS.

Impotency is a canonical diſability to avoid marriage in the ſpiritual court. The marriage is not void *ab initio*, but voidable only by ſentence of ſeparation during the life of the parties.

IMPRACTICABLE CASE, in *Algebra*. See IRREDUCIBLE.

IMPRECATION, derived from *im*, and *precor*, *I pray*; a curſe, or wiſh that ſome evil may befall any one.

The ancients had their goddeſſes called *Imprecations*, in Latin *Diva*, *i. e.* *Deorum ira*, who were ſuppoſed to be the executioners of evil conſciences. They were called *Diva* in heaven, *Furies* on earth, and *Eumenides* in hell. The Romans owned but three of theſe Imprecations, and the Greeks only two. They invoked them with prayers and pieces of verſes to deſtroy their enemies.

IMPREGNATION, derived from *impregnare*, of *pregnans*, a woman with child; the emission of the ſeed of the male in coition, by which the female conceives, or becomes with young. See GENERATION.

IMPREGNATION is alſo figuratively uſed in pharmacy, when a liquor imbibes the particles of ſome other body.

Thus a menſtrum is ſaid to be impregnated with a body diſſolved in it, as much as its pores are able to receive.

IMPREGNATION, in *Natural Hiſtory*, is one of the modes in which organized ſubſtances have become mineraliſed and preſerved in the ſtrata of the earth; Mr. William Martin, in his "Outlines," p. 50, defines this term, as applying to the mechanical impregnation of organic ſubſtances with mineral matters, and he ſhews the diſtinctions between this and a chemical union of mineral ſubſtances with the organic matter, called conversion.

IMPRESSED SPECIES. See **SPECIES.**

IMPRESSING, in the *Sea Language.* See **MANNING** *the Fleet.*

IMPRESSION, in *Natural History,* is a term implying the interior of the matrix or mould in which an extraneous fossil has been inclosed and its form impressed. The matrix is said to be filled when the reliquium remains in the impression, empty when the reliquium has been renewed from the impression. Sometimes, after the organic body has been removed, mineral or inorganic matter takes its place, and assumes the external form of the reliquia, and such are often called *casts*, which is the state in which the fossil shells of a great number of strata are found. Mr. James Parkinson, at the commencement of his "Organic Remains," was inclined, vol. i. p. 37, to exclude impressions and casts from the rank of secondary fossils or organic remains, but the further researches of this able writer seem to have considerably modified his ideas on this subject.

IMPRESSION, in *School Philosophy,* is applied to the species of objects which are supposed to make some mark or impression on the senses, the mind, and the memory.

The Peripatetics tell us, that bodies emit species resembling them, which species are conveyed by the exterior senses to the common sensory: these impressed species, being material and sensible, they say, are rendered intelligible by the active intellect; and when thus spiritualized, are called *expressions*, or *express species*, as being expressed from the others.

IMPRESSION is also frequently used in speaking of the editions of a book, or of the number of times it has been printed.

Impression, however, differs from *edition*: the former, properly speaking, takes in no more than what belongs to the printing, the letter, paper, margin, page, distances of words and lines, and the disposition of every thing that may have a good or bad effect upon the eye; the latter, besides all this, takes in the care of the editor, who has revised the copy, corrected or augmented it, adding notes, tables, and other like things, which he judged might contribute towards making the book more useful and correct.

Indeed, very frequently the word *edition* only refers to this latter part; as when, in speaking of the works of St. Augustine, we quote the edition of Erasmus, the Lovanits, Benedictines, &c. where we have no regard to the printing part, but only to the care and pains of the editors.

IMPRESSION, Privilege for. See **PRIVILEGE.**

IMPRESSIONS on *gems* and *medals.* See **GEMS** and **MEDALS.**

IMPREST, Auditors of. See **AUDITORS.**

IMPRISONMENT, the state of a person restrained of his liberty, and detained under the custody of another; and extends not only to a gaol, but to a house, stocks, or a man's being held in the street, &c. (2 Inst. 589.) None shall be imprisoned but by the lawful judgment of his peers, or by the law of the land. Mag. Ch. 9 Hen. III. c. 2. 25 Edw. III. stat. 5. c. 4.

No person is to be imprisoned, but as the law directs, either by the command or order of a court of record, or by lawful warrant, which warrant must be in writing, under the hand and seal of the magistrate, and expressing the cause of the commitment, in order to be examined (if necessary) upon a "habeas corpus;" or the king's process, on which one may be lawfully detained; and at common law a person could not be imprisoned unless he were guilty of some force or violence, for which his body was subject to imprisonment,

as one of the highest executions. Where the law gives power to imprison, in such case it is justifiable, provided he that does it in pursuance of a statute, exactly pursues the statute in the manner of doing it, for otherwise it will be deemed false imprisonment, and in consequence it is unjustifiable. Every warrant of commitment for imprisoning a person, ought to run, "Till delivered by due course of law," and not "Until farther order;" which has been held ill, and thus it also is, where one is imprisoned on a warrant, not mentioning any cause for which he is committed. If there be no cause expressed, the gaoler is not bound to detain the prisoner. For the law judges in this respect, saith Sir Edward Coke, like Festus the Roman governor; that it is unreasonable to send a prisoner, and not to signify withal the crimes alleged against him.

A person being sent to prison by a warrant from a secretary of state, without assigning any cause, &c. it was adjudged, that he ought to be discharged for that reason. Persons may also, by bail or habeas corpus, be discharged from their imprisonment in any case bailable. See the articles **HABEAS CORPUS**, **BAIL**, **PRISON**, **PRISONER**, and **GAOL.**

IMPRISONMENT, False. See **FALSE** and **APPEAL.**

IMPROMTU. See **IMPROMTU.**

IMPROPER FEUDS, in *Law.* See **FEUD.**

IMPROPER Fractions, in *Arithmetic.* See **FRACTIONS.**

IMPROPRIATION is a term used where the profits of an ecclesiastical benefice are in the hands of a layman.

In which sense it stands distinguished from appropriation, which is where the profits of a benefice are in the hands of a bishop, college, &c. though the two are now often used promiscuously. There are said to be 3845 impropriations in England.

IMPROPRIETY, the quality of something that is not fit, or proper. See **PROPER**, and **PROPRIETY.**

Grammarians observe three kinds of faults against purity in language; a solecism, barbarism, and impropriety: an impropriety is committed when a word is used that has not a *proper* signification.

This is an offence against lexicography, as barbarism respects etymology and the solecism syntax. It is the business of the lexicographer to assign to every word of the language the precise meaning or meanings which use hath assigned to it. This fault may be committed either in single words or in phrases. Improprieties as to single words are such as a writer is apt unwarily to be seduced into by some resemblance or proximity in sound or sense, or both. It is by proximity in sound that several are misled to use the word "obervation" for "observance," as when they speak of the religious obervation of a festival for the religious observance of it. By a similar mistake "endurance" hath been used for "duration," and confounded with it; whereas its proper sense is patience. This was the case in the days of queen Elizabeth, when endurance was synonymous with duration, though in this acceptation it is now obsolete. Thus also "human" and "humane" are sometimes confounded; the adjectives "ceremonious" and "ceremonial" are sometimes used promiscuously; and the word "construction" is variously applied, &c. &c. With regard to improprieties arising from a similitude in sense, we may mention "veracity" strictly applicable to persons, used for "reality," which pertains to things; "verdict" used for "testimony;" "risible" for "ridiculous," &c. &c. To this class we may refer the "idiotism," or the employing of an English word in a sense which it bears in some provincial dialect, in low and partial use, and which perhaps the corresponding word bears in some foreign tongue, unsupported by general use in our

own language: such are "impracticable" when it is used for "impassable," and applied to roads; "intend" when used for "mean," "decompound" for "analyse," &c. &c. Another error of the same kind is the "latinism;" such as the use of the word "affection," when applied to things inanimate, and signifying the state of being affected by any cause; and "integrity" when used for "entireness." To these properly succeeds that sort of the "vulgarism" in which only a low and partial use can be pleaded in support of the application that is made of a particular word. Of this an example occurs in the following passage cited from the "Guardian" (N^o 57) "'Tis my humble request you will be particular in speaking to (for on) the following points." Of the same stamp is "on't" for "of it." The derivatives, "falseness," "falsity," "falseness," from the root "false," are often erroneously applied for one another, though they ought to be distinguished. "Falseness" is properly used in a moral sense for want of veracity, and applied only to persons; the other two are applied only to things. "Falsity" denotes that quality in the abstract, which may be defined contrariety to truth. "Falseness" is an untrue assertion. The same misapplication occurs in the use of the word "conscience" for "consciousness."

Of improprieties that occur in phrases the first we shall mention is, when the expression, on being grammatically analysed, is discovered to contain some inconsistency, such as the phrase "of all others" after the superlative; e. g. "the most perfect of all others" should have been "more perfect than any other," or "the most perfect of all" the things to which it refers. To this class belong those improprieties which involve in them some absurdity. Others are those by which an author is made to say one thing when he means another. Another species of impropriety is that in which there appears some slight incongruity in the combination of the words; e. g. "when you fall into a man's conversation, &c." for "fall into conversation with a man:"—"the false taste the town is in, &c." for the "false taste of the town." Campbell's Philosophy of Rhetoric, vol. i. p. 456, &c.

IMPROVEMENT, in *Agriculture*, a term applied to any sort of amelioration which is produced on lands either by the several different operations and processes which they are capable of admitting, or by the general practices of cultivation. See DRAINING and WATERING, &c.

IMPROVEMENT of *Landed Property*, the art of rendering it more valuable to the proprietors, and at the same time more beneficial to the public. It has been well remarked that the possessors of this sort of property "have a double interest, a two-fold motive to incline them toward the improvement of their estates; namely, to augment their personal incomes, and to increase the prosperity of the land they live in."

The species of improvements that landed property is capable of admitting, are considered as very numerous; but they may probably be arranged under the following heads.

1. Reclaiming watery lands.
2. Appropriating commonable lands.
3. Consolidating appropriated lands.
4. Laying out estates.
5. Laying out farm-lands.
6. Laying out farms.
7. Improving farm-lands.
8. Improving wood-lands.
9. Improving waters.
10. Improving mines, quarries, &c.

The first of these objects may in most cases be effected by proper draining and embanking, the second by inclosure, the third by means of exchange, purchase, or sale; and the

whole of the rest by the several methods that are described under the particular heads to which they immediately belong. See DRAINING, EMBANKING, COMMONABLE Lands, &c. &c.

It is suggested, that by the political constitution of this country the government has no power or legal means of advancing its prosperity by the improvement of *appropriated territory*; unless by special acts of the legislature. And that even these are confined to a few particular objects; as drainage, inclosure, and the consolidation of intermixed lands; and these only, where a plurality of interests are concerned. In the mass of improvements which are here to be brought forward, and in all cases of private property, it is out of the power of the public to interfere. A proprietor may suffer his estate to lie waste with impunity, provided he thereby injures no other man's private property. And if an estate be permitted to lie partially waste, or under-productive, for the want of due improvement, the loss to the public, though not so large, is of the self-same nature. In the appropriation of a wild uncultivated country, it is hinted, that it might be wise in a government to reserve a power of rendering its lands productive, as a wise possessor of an estate reserves the right of keeping his farms in tenantable repair and husband-like cultivation at the expence of the tenant who refuses or neglects to perform his duty. But as no such reservation has been made, nor in any way claimed in this country, the proprietors of its lands are, it is supposed, bound not only by the ties of interest, but by those of honour, to promote their improvement.

It is considered that the basis or ground-work of improvement on which a practical man may tread with safety and full effect, is an accurate delineation of the *existing state*, together with a faithful estimate of the *present* value of the lands and other valuable particulars of an estate to be improved. A general map of the appropriated lands, promptly exhibiting the several farms and fields as they lie, and shewing the existing watercourses, embankments, fences, and buildings, the woodlands, standing waters, morasses, and moory grounds; the known mines and quarries, together with the commonable lands, if any, belonging to the estate, forms a comprehensive and useful subject of study to the practical improver. It is to him, what the map of a country is to a traveller, or a sea-chart to a navigator. If an estate is large, a faithful delineation of it will enable him in a few hours to set out with advantages respecting the connections and dependencies of the whole and its several parts, with which as many days, weeks, or months could not furnish him, without such scientific assistance. If, on the same plan, the rental value of each mine, quarry, woodland, and productive water in its present state be stated, the preparatory information which science is capable of furnishing may be considered as complete. And it remains with the artist to study, with persevering attention, the subject himself, in order to discover the species of *improvements* of which it is susceptible, and the suitable means of carrying them into execution. See *Landed Property*.

IMPROVIDE', in *Law*: See *Qui Improvidé*.

IMPROVISARE, *Ital.* to sing or play extempore.

IMPROVISATORE, *Ital.* an extemporaneous singer of verses upon a given subject. A voluntary player, an organist who is able to treat in a masterly manner a given subject of fugue, extempore, is justly allowed to be a man of considerable abilities.

The improvisatori, in poetry, seem confined to the southern provinces of Europe. Italy, Spain, and Portugal, appear exclusively to enjoy the gift. It is indeed unwillingly credited elsewhere. And yet there is nothing more com-

mon in Italy, than to see, during the carnival, two masks meet, defy, challenge, and attack each other in verse, and answer, itanza for itanza, to the same air; with a vivacity, dialogue, melody, and accompaniment, which, without the having been present, it is difficult to comprehend. But Dionysius Halicarnassens informs us, that in the first Roman triumph of Romulus over the Cænienses, the army followed in three several divisions, hymning their gods in songs of their country, and celebrating their general with *extemporary verses*: this account affords a very venerable origin to the improvisatori of Italy; as the event happened in the fourth year of Rome, seven hundred and forty-nine years before Christ, and the fourth year of the seventh Olympiad.

This surprising faculty, in modern times, extends to females. Such was the admirable improvisatrice, Madalena Morelli, commonly called the Corilla, whom we saw and heard at Florence in 1770; and who, besides her poetical inspirations, played well on the violin, resting it on her lap, not her shoulder, like Madame Sirman. It was at the house of Nardini, of whom she had learned the violin, that we heard her perform. She had likewise a pleasing voice, and sung with taste, expression, and no inconsiderable degree of execution. This accomplished female having been long celebrated all over Europe for the marvellous fertility and readiness with which she instantly produced the most elegant verses on whatever subject, and in whatever measure, she was requested to give specimens of her talents; after having been received with acclamation into the celebrated academy of the Arcadi at Rome in 1775, in the presence of the first nobility and men of letters and science, in July 1776 she was solemnly crowned in the Campidoglio, as Petrarch had been in the fourteenth century. See CORILLA.

IMPULSIVE, a term in philosophy, applied to the action of the body which impels or pushes another.

Thus the arm is said to give an impulsive motion to the stone that it throws. See PROJECTILE.

In this sense, impulsive stands contradicting with *attractive* and *repulsive*.

Sir Isaac Newton suggests, that attraction itself may possibly be effected by an impulsive power.

IMPURITY, in the *Mosaic* law. There were several sorts of impurity contracted under the law of Moses. Some were voluntary, as the touching of a dead body, or of any animal that died of itself, or of any creeping thing, or unclean creature; or the touching things holy by one who was not clean, or was not a priest; or touching persons under impure circumstances. Other kinds of impurity there were of an involuntary nature; for which we must refer the reader to Calmet, who shews what kind of purification was prescribed for each species of pollution. See Numb. xix. 11—14. Levit. xi. 24—43. Levit. xii. 23—45. Id. xv. 25. Calm. Dict. Bibl. in voc.

IMPUTATION, a term much used among divines, sometimes in a good, and sometimes in an ill sense: in the latter it is used to signify the charging the sin to the account of one, which was committed by another. The word, however, is generally used in an ill sense; for when we place any good to the account of another, we use the word attribute.

Thus Adam's sin is said by some divines to be imputed to all his posterity; all his descendants by his fall becoming as criminal in the sight of God, as if they had fallen themselves; and bearing the just punishment of his first crime. See ORIGINAL SIN.

Imputation, used in a good sense, signifies the charging of another's justice or merit.

Thus the justice of Jesus Christ is said to be imputed to us; his merits, and the price of his sufferings, being applied to us.

IN, in the *Manege*.—To put a horse IN, is an expression that signifies to breed and dress him, by putting him right upon the hand and the heels.

IN, in the *Sea Language*, denotes the state of any of a ship's sails, when they are furled or stowed: it is used in opposition to *out*, which implies that they are set, or extended to assist the ship's course.

IN-penny and out-penny, in our *Old Writers*, money paid by the custom of some manors on the alienation of tenants, &c.—In-penny and out-penny “*consuetudo talis est in villa de East Radham, de omnibus terris quæ infra Burgagium tenentur, viz. quod ipse, qui venderit vel dederit dictam tenuram alicui, dabit pro exitu suo de eadem tenura unum denarium, & simile de ingressu alterius; et si prædicti denarii a retro fuerint, ballivus domini distringet pro eisdem denariis in eadem tenura.*” Regilt. Prior. de Cokesford, p. 25.

IN and Out, in *Ship Building*, is a term often used to signify the scantling of the timbers the moulding way, but more generally applied to the bolts which connect the sides of the ship together by being driven the thwartship way through the knees, riders, &c.

INA, in *Biography*, king of Wexsex, one of the most illustrious princes in the Saxon heptarchy, succeeded to the crown in 689, and began his course by attempts at extending his dominions by force of arms. He invaded Kent, but was induced by a large sum of money to desist from his enterprise. He then obtained possession of Cornwall and Somersethire, which he annexed to his kingdom, treating the vanquished with a degree of humanity hitherto but little practised by the Saxon conquerors. By his code of laws he is placed as a legislator at the head of the Saxon kings previously to Alfred. Though he was disturbed by some insurrections at home, his long reign of thirty-seven years may be regarded as one of the most glorious and most prosperous of the heptarchy. In the decline of life he made a pilgrimage to Rome, and after his return shut himself up in a cloister, where he died. Hume.

INA, in *Geography*, a town of Japan, in the island of Niphon; 22 miles N.W. of Fanissima.

INACCESSIBLE *Height* or *Distance*. See ALTITUDE, DISTANCE, &c.

INACCESSIBLE *Island*, in *Geography*, a small island in the South Atlantic ocean, and one of those called the islands of Tristan de Cunha. It has obtained the name from its being a high, bluff, apparently barren plain, visible at the distance of 14 or 15 leagues, about nine miles in circumference, and having on the whole a very forbidding appearance; with a high rock detached from it at the south end. S. lat. 37° 19'. W. long. 11° 50'.

INACHIA, *Ἰνᾶχια*, in *Antiquity*, a festival in Crete, celebrated in honour of Leucothea, or Ino.

The word is compounded of Ino, and ἀχθῆ, i. e. grief; being, perhaps, a commemoration of Ino's misfortunes.

INACORI, in *Geography*, a town of Hindoostan, in Marawar; 20 miles N.N.W. of Ramanadporum.

INACTION, *cessation of action*, a term much used in the mystical divinity; by which is understood a privation, or annihilation of all the faculties; whereby the door is, as it were, shut to all external objects, and a kind of ecstasy is procured, during which God speaks immediately to the heart. It is the state of inaction that is held the most proper for receiving the Holy Spirit; and in this fit of dozing, they
say,

say, it is that God communicates sublime and ineffable sentiments and graces to the soul.

Some do not make it consist in this stupid kind of indolence, or general suspension of all sensation: but by inaction only mean a cessation of desires, in which, as the soul does not determine itself to any positive acts, neither does it abandon itself to useless meditations, or the vain speculations of reason; but demands in general every thing that may be agreeable to God, without prescribing any thing to him.

This latter is the doctrine of the ancient mystics, and the former that of the modern ones, or the quietists.

In general, however, it may be said, that inaction is not the most likely way of pleasing God; by our actions chiefly we are to gain his favour: he will have us to act; so that inaction cannot be agreeable to him.

INACTIVITY of Matter. See *Vis inertiae*.

INADEQUATE IDEA, or notion, is a partial or incomplete representation to the mind. See *IDEA*.

INAGUA, or YANAGUA, in *Geography*, two islands of the West Indies, near the N. W. coast of St. Domingo. N. lat. 21° 2' to 20° 26'. W. long. 72° 50' to 71° 30'.

INAJA GUACUBA, in *Botany*, a name by which some authors have called the cocoa-nut tree, or *palma Indica nucifera* of other writers.

INAKA, in *Geography*, a town of Japan, in the island of Nippon; 130 miles W. of Meaco.

INALIENABLE, that which cannot be validly alienated, or made over to another. See *ALIENATION*.

Thus the dominions of the king, the church, minors, &c. are inalienable, otherwise than with a reserve of the right of redemption for ever.

INAMBLUCIA, in *Natural History*, the name of a genus of fossils of the class of the selenites; but of the number of the columnar, not the rhomboidal kinds, and composed merely of parallel fibres. See *SELENITES*.

INAMELLING, or ENAMELLING. See *ENAMELLING*.

INANIMATE, derived from *in*, taken privatively, and *anima, soul*, denotes a body that has either lost its soul, or that is not of a nature capable of having any.

Thus a dead man is an inanimate lump, and metals are inanimate bodies.

INANITION, in *Medicine*, emptiness, or that state of the stomach when it has been too long deprived of food.

Man, as well as many other animals, is capable of subsisting for a considerable length of time without food. But, in this case, among other effects of inanition, such as languor, debility, &c., the most remarkable consequence which ensues, is the extreme irritability of the stomach itself, which is now easily excited to extraordinary vascular action, by the smallest quantity of food or drink, so that it is difficult to avoid occasioning inflammation of that organ, in attempting to restore the health and strength of the sufferer. This law of the vital power, (excitability, or sensorial power, in the language of Brown and Darwin,) is the ground-work of the systems of medicine promulgated by these two physicians; namely, that whenever the accustom'd stimulus of any organ, or of the body at large, has been long withdrawn, such an accumulation of that power takes place, that a much smaller stimulus than ordinary is capable of producing extraordinary excitement. (See *EXCITABILITY*.) In such cases, therefore, the utmost caution is required to restore the natural stimulus by slow degrees; using first substances of the least stimulating power, and in very small quantity. Thus in a frost-bitten limb, which is produced by the too great abstraction of the stimulus of heat, the attempt to restore its

vitability by warm applications is invariably productive of inflammation and gangrene, and the limb will drop off, if the life of the patient be not also destroyed. The only successful mode of restoration is to rub the part with snow, or with cold water, which are of a temperature something above the cold of the limb. (See *COLD*.) In like manner, in the attempt to restore a person to strength, who has suffered from *inanition*, the first nutriment given must be fluid, that it may not irritate by its hardness and weight, in small quantity, for a similar reason, destitute of every heating and stimulating quality, from vinous, spirituous, or aromatic substances, and very easy of digestion, or containing little nutriment, so that the action of the stomach may not be too much excited for accomplishing the digestive process. Hence in extreme cases, a spoonful of milk and water, or milk alone, to be repeated every hour, would be one of the safest and most effectual remedies: and by slow and cautious steps, nutriment of a more substantial kind, and more copious in quantity, might be afterwards resorted to, attending rather to the wants of the stomach, than to the stated hours of meals.

INANITY, the school term for emptiness, or absolute vacuity, and implies the absence of all body and matter whatsoever, so that nothing remains but mere space.

INARCHING, in Gardening, a particular sort of grafting, called also by some grafting by approach. It is used when the stock intended to be grafted on, and the tree from which the graft is to be taken, stand so near one another, that they may be brought to touch. The branch to be inarched is to be fitted to that part of the stock where it is to be joined, the rind and wood are to be pared away on one side for the length of three inches, and the stock or branch where the graft is to be united is to be served in the same manner, so that the two may join equally together, and the sap meet; a little tongue is then to be cut upwards in the graft, and a notch made in the stock to admit it, so that when they are joined, the tongue will prevent their slipping, and the graft will more closely unite to the stock. Having thus brought them exactly together, they may be tied with some bass or worsted, or other soft tying, and then the place must be covered with some grafting clay, to prevent the air from drying the wound, and the wet from rotting the stock: a stake must be fixed in the ground, to which both the stock and the graft must be tied, to prevent the wind's displacing them. When they have remained in this state four months, they will be sufficiently united, and the graft may then be cut off from the mother-tree, observing to slope it close to the stock, and at this time there should be fresh clay laid all round the part. This operation should be performed in April or May, that the graft may be perfectly united to the stock, before the ensuing winter. It is principally practised upon oranges, myrtles, jessamines, walnuts, and firs, and some other trees, which do not succeed well in the common way of grafting. But it is a wrong practice when orange trees are designed to grow large, for these are seldom long-lived after the operation. See *ABLACTATION* and *GRAFTING*.

INARTICULATE, an epithet applied to such sounds, syllables, or words, as are not pronounced distinctly. See *ARTICULATION*.

INAUGURATION, the coronation of an emperor, or king; or the consecration of a prelate, so called in imitation of the ceremonies used by the Romans, when they were received into the college of augurs. See *CROWN, KING,* and *BISHOP*.

The word comes from the Latin *inaugurare*, which signifies to dedicate a temple, or to raise any one to the priesthood, having, in order to that, first taken auguries. See AUGUR, and AUGURY.

IMBATZKOI NOVIMSKOI, in *Geography*, a town of Russia, in the government of Tobolsk, on the Enisei; 124 miles S. of Turuchansk. N. lat. $63^{\circ} 40'$. E. long. $89^{\circ} 14'$.

IMBATZKOI *Verchnei*, a town of Russia, in the government of Tobolsk; 168 miles S. of Turuchansk.

IN-BOARD, a term used to signify any thing that is within the ship; as the in-board works are all designed on a drawing so called, &c.

INCA, or YNCA, an appellation which the natives of Peru give to their kings and princes of the blood.

The chronicle of Peru relates the origin of the incas: this country had been a long time the theatre of all sorts of wars, horrible crimes, and dissensions, till at length there appeared two brothers, the one of whom was called Manco Capac: of this person the Indians use to tell wonders; they say he built the city of Cusco, settled laws and policy, and taught them to adore the sun: and he and his descendants took the name of inca, which, in the language of Peru, signifies *king*, or *great lord*. These incas grew so powerful, that they made themselves masters of the whole country, from Chili to Quito, establishing in every province their peculiar policy and religious institutions, and held it till the divisions between the brothers Huascar and Atahualpa; which the Spaniards under Pizarro laying hold of, made themselves masters of Peru, and put an end to the empire of the incas, in 1533. They number only twelve of these incas. It is said, the most considerable among the nobles in the country still bear the name of inca.

INCALESCENCE, compounded of *in*, and *caleo*, or *caleo*, *I grow warm*, the growing hot of any thing, either by motion and friction, or as quick-lime does by pouring water on it.

INCALESCENT MERCURY, a name given by Mr. Boyle to some mercuries of an uncommon preparation; which, by being mingled with a due proportion of gold-leaves, or small filings, would amalgamate and grow hot with the gold.

INCAMERATION, derived from *in*, and *camera*, *chamber*, in the *apostolic chancery*, the union of some land, right or revenue, to the domains of the pope. See CHAMBER.

INCANTATION, derived from the Latin *in*, and *canto*, *I sing*, (see CHARM, and CARMEN,) *incantment*; words and ceremonies used by magicians to raise devils; or rather to impose on the credulity of the people. See CONJURATION, FASCINATION, MAGIC, WITCHCRAFT, &c.

INCAPACITY, in matters of benefices, among the canonists, is of two kinds; the one renders the provision of a benefice null in its original; the other is accessory, and annuls the provisions which at first were valid.

Incapacities of the first kind, are the want of a dispensation for age in a minor, for legitimation in a bastard, for naturalization in a foreigner, &c.

Of the latter kind, are grievous offences and crimes: as being concerned in seeing a sentence of death executed, &c. which, they decree, vacate the benefice to all intents, or render the holding it irregular.

INCARNACION, in *Geography*, a town of Paraguay; 360 miles S. of Assumption.—Also, a town of New Navarre; 18 miles W. of Casa Grande.

INCARNATION, in *Theology*, signifies the act whereby

the Son of God assumed the human nature; or the mystery by which Jesus Christ was made man, in order to accomplish the work of our salvation. The era used among Christians, whence they number their years, is the time of the incarnation, that is, of Christ's conception in the virgin's womb.

This era was first established by Dionysius Exiguus, about the beginning of the sixth century, till which time the era of Dioclesian had been in use.

Some time after this, it was considered; that the years of a man's life were not numbered from the time of his conception, but from that of his birth: which occasioned them to postpone the beginning of this era for the space of one year, retaining the cycle of Dionysius entire in every thing else.

At Rome they reckon the years from the incarnation, or birth of Christ, that is, from the 25th of December, which custom has obtained from the year 1431. In France, and several other countries, they also reckon from the incarnation: but then they differ from each other in the day of the incarnation, fixing it after the primitive manner, not to the day of the birth, but conception of our Saviour. Though the Florentines retain the day of the birth, and begin their year from Christmas. See Petav. de Doct. Temp. Grandamicus de Dei Nat. See ÆRA and EPOCHÆ.

INCARNATIVE, an epithet in *Surgery*, applied to such medicines as tend to promote the process, by which wounds and ulcers become filled up with granulations.

INCARNATIVE *Bandage*. See BANDAGE.

INCARNATIVE *Suture*. See SUTURE.

INCENADA DE BARRAGAN, in *Geography*, a town of South America, situated on the W. bank of the Barragan, at its union with the Plata. The houses are irregularly built, and the inhabitants are generally indolent and poor; 21 miles W. of Buenos Ayres.

INCENDIARY, INCENDIARIUS, in *Law*, is applied to one who is guilty of maliciously setting fire to another's dwelling-house, and all out-houses that are parcel thereof, though not contiguous to it, nor under the same roof, as barns and stables. A bare intent, or attempt to do this by actually setting fire to a house, unless it absolutely burns, does not fall within the description of *incendit et combussit*. But the burning and consuming of any part is sufficient, though the fire be afterwards extinguished. It must also be a malicious burning; otherwise it is only a trespass. This offence is called arson in our law.

Among the ancients, criminals of this kind were to be burnt. "Qui ædes, acervumque frumenti juxta domum positum sciens, prudensque dolo malo combusserit, vincit igni necatur." See ARSON. See also BLACK-*art* and FIRE-*cocks*.

INCENSE, from *incensum*, q. d. *burnt*; as taking the effect for the thing itself; an aromatic, odoriferous resin, otherwise called *frankincense*.

INCEPTIVE, a word used by Dr. Wallis, to express such moments, or first principles, which, though of no magnitude themselves, are yet capable of producing such as are. See INFINITE, and INDIVISIBLE.

Thus a point has no magnitude itself, but is inceptive of a line which it produces by its motion. So a line, though it have no breadth, is yet inceptive of breadth; that is, it is capable, by its motion, of producing a surface which has breadth, &c.

INCERATION, in the *Materia Medica*, the mixing of liquids with something that is dry, by a gentle soaking, till the

the composition be brought to a substance of the consistence of soft wax.

INCERTAINTY, in *Law*, is where a thing is so ambiguously set down, that the plain meaning cannot be understood: and this is said to be the mother of contention. The questions of incertainty arise sometimes on matter of record, as writs, counts, pleas, verdicts, &c. and sometimes on deeds or writings, or upon contracts, &c. (5 Rep. 121. Plowd. 25.) In law proceedings, incertainty will make them void; for all proceedings in law are to be certain and affirmative; but the defendant may be at a certainty as to what he should answer, &c. (Plowd. 84.) If the court and verdict in an appeal be uncertain, there can be no judgment given thereon; and it is the same on an indictment. (3 Mod. 121.) Incertainty in deeds renders them void; but sometimes a term for years granted by lease, may be made certain by reference to certainty; and incertainty may be reduced to certainty by matter, *ex post facto*, implication, &c. (Plowd. 6. 273. 6 Rep. 20.) If there are two men of one name, and a devise of lands, &c. is to one of that name, without any distinction, it will be void for incertainty; though perhaps an averment may make it good. (2 Bulstrode, 180.) Incertainty in declarations of uses, of fines, of lands, &c. is rejected in law; for otherwise there would be no certain inheritances. 9 Rep.

INCEST, the crime of venereal commerce between persons who are related in a degree prohibited marriage by the laws of the country.

Some are of opinion, that marriage ought to be permitted between kinsfolks, to the end that the affection, so necessary in marriage, might be heightened by this double tie; and yet the rules of the church have formerly extended this prohibition even to the seventh degree, but time has now brought it down to the third or fourth degree. See **MARRIAGE**.

Most nations look on incest with horror, Persia and Egypt alone excepted. In the history of the ancient kings of those countries we meet with instances of the brother's marrying the sister: the reason was, because they thought it too mean to join in alliance with their own subjects: and still more so to have married into the families of any foreign princes.

As to the Persians, there was a still more abominable sort of incest practised by their magi: if we may trust Catullus, *carm.* 91.

“*Nam magus ex matre & gnato gignatur oportet,
Si vera est Perfarum impia religio.*”

In 1650, incest and wilful adultery were made capital crimes; but at the Restoration it was not thought proper to renew a law of such unfashionable rigour: and these offences have been ever since left to the feeble coercion of the spiritual court, according to the rules of the canon law.

INCEST, *Spiritual*, is the like crime committed between two persons who have a spiritual alliance, by means of baptism or confirmation.

INCEST, *Spiritual*, is also understood of a vicar, or other beneficiary, who enjoys both the mother and the daughter; that is, holds two benefices, the one whereof depends on the collation of the other.

Such a spiritual incest renders both the one and the other of those benefices void.

INCESTUOUS, the name of a sect or heresy, which arose in Italy about the year 1065.

The heresy of the Incestuous had its beginning at Ravenna; the learned of which place, being consulted by the Florentines about the degrees of affinity which prohibit marriage, made answer, that the seventh generation, mentioned

in the canons, was to be taken on both sides together; so that four generations were to be reckoned on one side, and three on the other.

They proved this their opinion by a passage in Justinian's Institutes, where it is said, that a man may marry his brother's or sister's grand-daughter, though she be but in the fourth degree; whence they concluded, that if my brother's grand-child be in the fourth degree with respect to me, she is in the fifth with respect to my son, in the sixth with respect to my grandson, and in the seventh with respect to my great grandson.

Peter Damian wrote against this opinion, and pope Alexander II. condemned it in a council held at Rome.

INCH, a measure of length, in China, is $\frac{1}{7}$ th of the Chinese foot = 10 fen = 100 li = 100 hao.

INCH, *English lineal*, $\frac{1}{7}$ th of an English foot = $1\frac{1}{3}$ digits or finger's breadth = 3 barley-corns = 48 hair's breadths = $\frac{1}{36}$ th English yard = .938306 pounces of France = .02539185 metres of the new measures = .1262626 links.

INCH, *English square or superficial*, is $\frac{1}{144}$ th, or .00694444 square feet = .000644746 square metres of the new measures of France = .01594225 square links.

INCH, *English cubic or solid*, is $\frac{1}{1728}$ th, or .000578704 cubic feet = .0000163713 cubic metres of the new measures of France = .00201291 cubic links.

INCH, *French, of length*, or pounce of the old measures of France, was $\frac{1}{72}$ th of the Paris foot = 12 lines = 1.0657 English inches = .02706137 metres of the new measures = .1345644 links.

INCH, *Scotch, of length*, is $1\frac{1}{73}$ th English inches = 1.0054054 = $\frac{1}{72}$ th Scotch foot.

INCH, in *Geography*, an island in the bay called Lough Swilly, in the county of Donegal, Ireland. It is very fertile, and contains about 2000 acres. Its land and the adjoining shores are high, with cultivation spreading over them, and little clusters of cabins with groups of wood. The water is of great depth, and a safe harbour for any number of ships. Inch was the great resort of the Lough Swilly herring fishery, which at one time employed 500 boats, and afforded subsistence to a great number of people. A large salting house with necessary store rooms was built in the island, but the profits of the fishery have declined.

INCH, a town of Scotland, in the county of Aberdeen; 10 miles N. W. of Inverary.

INCH-Callech, an island of Scotland, in Loch-Lomond, on which are the remains of a conventual church.

INCH-Colm, a small island of Scotland, on the northern side of the Frith, anciently called Amonia; on which are the ruins of a celebrated abbey of Augustine monks, founded about the year 1123, by Alexander I, king of Scotland, who was thrown upon it by a tempest, in gratitude for his escape, and dedicated to St. Columba. It was pillaged by the fleet of Edward III. of England, when he invaded Scotland. Some ruins still remain. N. lat. 56° 3'. W. long. 3° 18'.

INCH-Garvie, a small island in the Forth, opposite to Queensferry, fortified with cannon to defend the river.

INCH-Keith, a small island of Scotland, in the Frith of Forth; so called from the name of a brave hero who fought valiantly against the Danes in 1010, to whom it was granted; 12 miles E. S. E. of Dumfermline. N. lat. 56° 3'. W. long. 3° 9'.

INCH-Kenneth, a small island near the W. coast of Mull. N. lat. 56° 29'. W. long. 6° 10'.

INCH-Marnoch, a small island, about a mile in extent, near the W. coast of the isle of Bute; it has 120 acres of arable land,

land, 40 of brushwood, nearly 300 of moor, together with strata of coral and shells on the W. side.

INCII-Murrin, an island in Loch-Lomond, two miles long, which is converted into a deer-park. On it are the remains of a mansion, belonging to the family of Lenox.

INCII-Point, a cape of Ireland, between Dingle bay and Cattlemain harbour, in the county of Kerry; 13 miles E. from Dingle.

INCII of Gand'e, a manner of selling goods among merchants. The method of it is thus: Notice is usually given upon the Exchange in writing and elsewhere, when the sale is to begin: against which time the goods are divided into several parcels, called *lots*, and papers printed of the quantity of each, and of the conditions of sale; as, that none should bid less than a certain sum more than another had bid before. During the time of the bidding a small piece, of about an inch, of wax-candle, is burning; and the last bidder, when the candle goes out, has the lot or parcel exposed to sale.

INCHASING, in *Sculpture*. See **ENCHASING**.

INCHIGELLA, in *Geography*, a small town of the county of Cork, province of Munster, Ireland, near the source of the river Lee, over which it has a bridge. It is situated in a wild mountainous country, and is a very poor place. It is eight miles W.S.W. from Macromp, and 24 W. from Cork.

INCHIN, a small island in the Pacific ocean, near the coast of Chili. S. lat. $45^{\circ} 40'$.

INCHOATIVE, a term signifying the beginning of a thing, or action; the same with what is otherwise called *inceptive*.

INCHOATIVE verbs denote, according to Priscian and other grammarians, verbs that are characterised by the termination *scio* or *scor*, added to their primitives: as *augefco*, from *augeo*, *calefco*, from *caleo*, *dulcefco*, from *dulcis*, *irafcor*, from *ira*, &c.

INCHOFFER, MELCHIOR, in *Biography*, a learned German, was born at Vienna in 1584. Having laid the foundation of a learned education, he applied himself to the study of the law, and became a distinguished proficient in it at the age of 23. He then quitted it, and entered himself among the Jesuits, went to Rome and employed his time in the study of philosophy, theology, and the mathematics. Shortly after this he was called to fill the chair of professor in those faculties, during several years at Messina, in Sicily. In 1630 he published a book entitled "The Virgin Mary's Letter to the People of Messina proved to be genuine." Complaints were preferred against him before the congregation of the "Index" at Rome, on account of this publication. He immediately repaired to the city, vindicated himself, and was allowed to reprint his work, with a small alteration in the title. He died at Milan in 1648, when he was about 64 years of age. Having received some injuries from his brethren, he wrote a satire against them, which was printed after his death under the title of "Monarchia Solipsorum." Inchoffer was author also of "Tractatus Syllepticus, in quo quid de Terræ Solisque motu, vel statione secundum Sacram Scripturam et S.S. Patrum sentiendum, &c. Ostenditur, 1633;" "De sacra Latinitate, de variis Linguae Latinae mysteriis, ex Origine, Progressu, Fine," &c.; "Historiæ trium Magorum;" likewise the first volume of a work entitled "Annalium Ecclesiasticorum Regni Hungariæ," which is said to have exhibited such proofs of critical skill and deep research, as occasioned regret that the author did not live to complete his plan.

INCHTURE, in *Geography*, a town of Scotland, in the

county of Perth, on the road between Perth and Dundee; 9 miles E. of Perth.

INCIDE, in *Medicine*, to *cut*, whence also the adjective *incisive*, obsolete terms, applied to certain articles of the materia medica, to denote the action and quality by which certain fluids are detached from the parts to which they adhere, by an operation which has been conceived analogous to *cutting* with a sharp instrument, probably from the peculiar sensation which they excite. These *incisives* are principally *acids*, *alkalis*, or neutral salts, the action of which upon the palate, and other sensible parts, is, from the same analogy, called *sharp*. Hence also, in popular language, we speak of *cutting the phlegm*, &c. But this action is principally a chemical *coagulation of the mucus* (as in the case of fore throat), which then loses its adhesive qualities, and is easily rejected; and not a mechanical division of the particles, by means of the pointed and sharp atoms of those acid and saline matters, as the original employers of the term imagined.

INCIDENCE, in *Mechanics*, expresses the direction in which one body strikes on another; otherwise called *inclination*.

In the incursions of two moving bodies, their incidence is said to be *perpendicular* or *oblique*, as their directions or lines of motion make a straight line, or an oblique angle at the point of contact.

INCIDENCE, Angle of, commonly denotes the angle comprehended between an incident ray, or other body, and a perpendicular to the plane in the point of incidence.

Thus, supposing A B (*Plate I. Optics, fig. 3.*) an incident ray proceeding from the radiant point A, to B the point of incidence, and H B a perpendicular to D E in the point of incidence: the angle A B H, comprehended between A B and H B, is the angle of incidence, by others called the angle of inclination.

INCIDENCE, Angle of, is also used by Dr. Barrow, and some others, for the complement of the above angle, or of the angle of inclination.

Thus, supposing A B an incident ray, and H B a perpendicular, as before; the angle A B D comprehended between it and the reflecting or refracting plane D E, is the angle of incidence; and the angle A B H the angle of inclination.

Others, with Wolfius, make another distinction; which see under the articles **ANGLE**, **REFLECTION**, and **REFRACTION**.

It is demonstrated by optical writers, 1°. That the angle of incidence A B H is always equal to the angle of reflection H B C, or the angle A B D to the angle C B E, and they lie in the same plane. See **REFLECTION**.

2°. That the sines of the angles of incidence and refraction are to each other accurately, or very nearly in a given ratio. See **REFRACTION**.

3°. That from air to glass the sine of the angle of incidence is to the sine of the refracted angle as 300 to 193, or nearly as 14 to 9: on the contrary, that from glass to air, the sine of the angle of incidence, is to the sine of the refracted angle as 193 to 300, or as 9 to 14. See **REFRACTION**.

It is true, sir Isaac Newton having shewn, that the rays of light are not all equally refrangible, there can be no precise ratio fixed between the sines of the angles of refraction and incidence: but the proportion which comes nearest is that above specified. See **LIGHT**, **COLOUR**, **REFRANGIBILITY**, &c.

INCIDENCE of Eclipse. See **ECLIPSE** and **IMMERSION**.

INCIDENCE, Axis of. See **AXIS of incidence**. Such is the line B H, *fig. 3.*

INCIDENCE, *Cathetus of*. See **CATHETUS of incidence**; see also **REFLECTION**.

INCIDENCE, *Line of*, in *Catoptrics*, denotes a right line, as A B (*fig. 3*), whereby light is propagated from a radiant point A, to a point B, in the surface of a Speculum. This is also called an *incident ray*.

INCIDENCE, *Line of*, in *Dioptrics*, is a right line, as A B, *Plate VI. fig. 4*, whereby light is propagated unrefracted, in the same medium, from the radiant point to the surface of the refracting body H K L I.

INCIDENCE, *Point of*, is the point B on the surface of the reflecting or refracting medium, in *Plate I. fig. 3*, and *Plate VI. fig. 4*, on which the incident ray falls.

INCIDENCE, *Scruples of*. See **SCRUPLES**.

INCIDENT, in a general sense, denotes an event, or a particular circumstance of some event.

INCIDENT, in *Law*, is a thing appertaining to, or following another, that is more worthy or principal. A court-baron is inseparably incident to a manor; and a court of pie-powders to a fair.

INCIDENT, in a *Poem*, is an episode, or particular action, joined to the principal action, or depending on it.

A good comedy is to be full of agreeable incidents, which divert the spectators, and form the intrigue. The poet ought always to make choice of such incidents as are susceptible of ornament suitable to the nature of his poem. The variety of incidents well conducted makes the beauty of an heroic poem, which ought always to take in a certain number of incidents to suspend the catastrophe, that would otherwise break out too soon.

INCIDENT Ray. See **RAY**, **INCIDENCE**, and **INCLINATION**.

INCIDENTS, in the *Materia Medica*. See **ATTENUANTS**.

INCINERATED SALTS, the same with lixivial salts. See the following article, and **LIXIVIAL**.

INCINERATION, derived from *in*, and *cinis, ashes*, in *Chemistry*, the reduction of vegetables into ashes, by burning them gently.

Thus fern is incinerated for the making of glafs.

INCISED WOUNDS, wounds made with sharp-edged, cutting instruments. See **WOUNDS**.

INCISION, the same as incised wound.

INCISION, *Crucial*. See **CRUCIAL**.

INCISION, *grafting by double*. See **GRAFTING**.

INCISIVUM FORAMEN, in *Anatomy*, a hole in the bony palate, just behind the incisor teeth, forming a communication between the palate and the nasal cavities. See **CRANIUM**.

INCISIVUS, or **INCISORIUS**, an epithet applied by Winslow to some muscles about the lips. The incisivus medius is the depressor alæ nasi. (See **DEPRESSOR**.) The incisivus lateralis is the levator labii superioris. (See **DEGLUTITION**.) The incisivus inferior is the levator menti. See **DEGLUTITION**.

The openings leading from the nose to the palate have been called ductus incisivi.

INCISORES, the four front teeth of each jaw; so named because they possess sharp cutting edges. By Linnæus they are called dentes primores. See the description of the teeth in the article **CRANIUM**.

INCISORIUM, from *incido*, to cut, the table for operations and dissections, used by surgeons and anatomists.

INCISORIUS, in *Anatomy*. See **INCISIVUS**.

INCLAVE, in *Heraldry*, a term used by Morgan to express an irregular line in heraldry, differing from the indented, inverted, and all the others. It is called by some patee, and by others the dove-tail line, from its resemblance to that joint, known among our joiners by this name. It is

also called by some the labelled line. It has these names from the figure of the points, as they proceed from the ordinary, such as a cheif or sels resembling the ends of labels.

INCLINATION, in *Medicine* and *Chemistry*, the operation of pouring off a clear liquor from some faces, or sediment, by only gently slooping the vessel.

This amounts to the same with what is otherwise called *decentration*.

INCLINATION, in *Physics*, expresses the mutual approach or tendency of two bodies, lines, or planes, towards one another; so that their directions make at the point of contact an angle of a greater or lesser magnitude.

INCLINATION of a right line to a plane, is the acute angle which such a right line makes with another right line drawn in the plane through the point where the inclined line intersects it, and through the point where it is also cut by a perpendicular drawn from any point of the inclined lines.

INCLINATION of Meridians, in *Dialling*, the angle that the hour-line, on the globe, which is perpendicular to the dial plane, makes with the meridian.

INCLINATION of an incident ray, otherwise called the *angle of inclination*. See **Angle of INCIDENCE**.

INCLINATION of a reflected ray, is the angle which a ray after refraction makes with the axis of inclination.

Thus, if A B, (*Plate I. Opt. fig. 3*.) be the incident ray, H B a perpendicular to D E in the point R, and B C the reflected ray, C B H will be the inclination of the reflected ray, and A B I the inclination of the incident ray.

INCLINATION of the axis of the earth, is the angle which it makes with the plane of the ecliptic: or the angle between the planes of the equator and ecliptic.

INCLINATION of the magnetic needle. See **DIPPING-needle**.

INCLINATION of a planet, is an arc or angle comprehended between the ecliptic, and the plane of a planet in his orbit. See each planet.

INCLINATION of a plane, in *Dialling*, is the arc of a vertical circle, perpendicular both to the plane and the horizon, and intercepted between them.

To find this, take a quadrant, and apply its side to the side of a square, and apply the other side of your square to your plane: if the plumbet fall parallel to the side of the square, then the lower side of the square stands level; by which draw an horizontal line, whereon erect a perpendicular, and apply your square to that perpendicular; and if the plumbet falls parallel to the side of the square, then that is also a level line, and your plane stands horizontally: if the plumbet fall not parallel to the side of the square, then turn your square, until it does; and draw an horizontal line, on which erect a perpendicular, to which apply your square, and observe what angle your plumbet makes on the quadrant, with the side of the square: that is the angle of the inclination of the plane. See **DECLINATION**.

INCLINATION of two planes, is the acute angle made by two lines drawn one in each plane, through a common point of section, and perpendicular to the same common section.

Thus, in *Plate VIII. Geometry, fig. 101*, the inclination of the plane K E G L to the plane A C D B, is the angle H F I, made by the right lines H F and F I in the point F, perpendicular to the line of section E G.

INCLINATION, Angle of, in *Optics*, is the same with what is otherwise called the *angle of incidence*.

INCLINATION, Argument of. See **ARGUMENT**.

INCLINATION, in a moral sense. See **APPETITE**.

INCLINATION, in *Mining*, is used sometimes to express the fall or declivity of a stratum which deviates from the horizontal, or a mineral vein, windike, or fault, which deviate from the vertical, and such strata or fissures are said to dip, deep,

deep, pick, decline, tilt, have a declivity, or to hade, want, batter-off, underbeat, &c. in different districts or situations. See **DIP** and **HADE**.

INCLINED PLANE, in *Mechanics*. See **Inclined PLANE**. See also **MECHANICS**, and **MECHANICAL powers**.

INCLINED Planes, in *Engineering*, are strong frames of wood or masses of earth and masonry, formed into an inclined plane at top, on which a single or double rail or tram-way is laid for drawing up and letting down boats or waggons from one water level of a canal to another, or from one part of a rail-way to another, where a deficiency of water prevents the use of locks, or the descent is too rapid for a rail-way to descend: formerly, inclined planes for boats were called rolling bridges. In our article **CANAL** we have given the principles of setting out and constructing inclined planes, and instanced all the most considerable works of this kind in Great Britain.

INCLINED Plane, in *Rural Economy*, a term applied to that sort of plane which forms an oblique angle with the horizon. In the construction of carriage-ways for the conveyance of different kinds of heavy loads up steep elevations and other rising grounds, this mode has lately been had recourse to with much advantage, in enabling great weights to be drawn on them with much less power of draught. In collieries, and other similar extensive works, roads formed on this principle are frequently found highly beneficial. It has been lately observed, that though this sort of convenience may have hitherto been principally confined to coal works, mines, and other undertakings of the same nature, the period is now at hand "when carriages, moving on level surfaces, or on gently inclining planes, with little friction, and without obstruction, are fast spreading over the face of the country." Besides those which have been noticed, there are many other uses and situations in which they may be employed with the utmost utility and advantage. See **RAILWAYS**.

INCLINED Towers. See **TOWERS**.

INCLINERS, in *Dialling*. See **DIAL**, and **DECLINERS**.

INCLOSING of LAND, in *Agriculture*, the act, operation, or process of taking in and dividing grounds by means of fences. The advantages that necessarily result from the inclosure of land, whether in a state of waste, common, or otherwise, are extremely numerous, and of the most material consequence to the community. It has been observed, that "in addition to those of ascertaining and securing the property, it holds out not only the most ready and certain means of improvement in the cultivation of the former, but in such as have been long under the plough, or any other system of management; being equally useful in its tendency to bring them into the most perfect and advantageous states of culture. Without inclosing, it is conceived, however, much attention may have been paid, or expence incurred, in carrying on the various processes that are requisite in preparing land for the reception and growth of good crops; whether of the grain, root, or grass kinds, it is obvious that they can neither be conducted under the most beneficial management, nor yield the full advantage they are capable of, while they continue in a free and open state. Where the land is in a state of arable cultivation without inclosure, the crops, of whatever sort they may be, must constantly be exposed to depredations of various kinds; and if in the state of grass or pasture, injuries of the most prejudicial nature must frequently be unavoidably sustained. And the great advantage and importance of inclosing land are still more fully demonstrated in the differences which may be observed in respect to the quantity and value of the produce, in such as have been thus divided, over that which is cultivated in

the state of open or common field." It has been stated by Mr. Donaldson, that "in proportion as a field or a country is bleak, naked, and exposed to chilling blasts and winter storms, in the same proportion will it be unproductive, compared with lands more favourably situated. Inclosing is a mean of obtaining, by art, a certain degree of that genial warmth so essential to the production of valuable crops, but which nature is not always pleased to bestow. Every day's experience proves that where grounds are sheltered from the violence of storms, as by garden walls, or by plantations of forest trees, they are more productive, and vegetation is earlier than in others similar in every respect, unless in regard to exposure. How many instances occur to establish this fact in respect to large fields, as well as to gardens, orchards, &c. Let the observant farmer, who possesses an inclosed farm, examine that part of a field where, owing to the decay of fence, the wind enjoys a free passage, and he will be satisfied of the benefit of inclosing, from the superiority of the crop in the other part of the field over that which is within the influence of this additional exposure. While, on the other hand, the possessor of an open field farm, by examining the superior verdure that takes place in any part of an open field, that is, by some accidental circumstances sheltered in a remarkable degree, may satisfy himself, that were the whole equally sheltered, the produce would be more abundant." In the Mid-Lothian Report it is likewise stated, that "as the warmest air lies nearest the surface of the earth, being that portion of the atmosphere, which, like a blanket, nature spreads over the soil and its productions, fences of all kinds tend more or less to prevent such a valuable covering from being blown off by the winds." Indeed, by judicious fencing in, or inclosing of land, there can be no doubt but that warmth and shelter is afforded to cattle of various kinds. Under these circumstances, animals are invariably found not only to advance in flesh much more rapidly, but to be freer from disorders, than when kept in situations or exposures that are bleak, and which cannot afford warmth or shelter to them. "If any person entertain doubts respecting the inclosed pastures being better adapted for rearing and fattening live stock than open fields, he may easily satisfy himself by comparing the live stock in an inclosed parish with that of one in the open field state." It is supposed there must be much mistake "if he will not find them in the latter, not only fewer in number, but each animal, on an average, thirty or forty per cent. inferior in value." In fact, inclosing, it is conceived, "may be denominated the first step towards effecting improvements in the breeds of the different species of live stock. And on the whole, this "is reasoning on plain established facts, and on such as afford the most indubitable evidence of the superiority of inclosed fields, whether for tillage or pasturage. Were farther proof necessary, the additional rent that is every where paid for inclosed land, beyond that paid for land of an equal quality in the open field state, is sufficient to place the matter beyond all possibility of doubt."

Besides, the value of the land in most situations is considerably improved by the practice of inclosing. The proportion of increase that may be produced in this way, whether the lands inclosed be in a state of lease, or in the occupation of the proprietor, must, however, necessarily depend greatly on the nature of the soil, and the system of management that is afterwards pursued.

In a work on modern agriculture it is remarked, that "lands of a middling quality, good turnip soil for instance, are probably benefited to a greater degree by inclosing, than those of superior or inferior quality. Lands of this description, in the open field state, may, it is contended, be considered

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considered as rented to the full at fifteen shillings per acre ; whereas there are few instances where such lands, when inclosed, are rented under twenty shillings ; an advance so great as to afford the proprietor a handsome profit after paying the interest of the money expended. Thus does inclosing not only increase the quantity and quality of the produce, so as to enable the farmer to pay his landlord a higher rent, and to contribute a larger share to the revenues of the state, but from so many people being constantly employed in making and repairing the fences, inclosing, in this view, must also be considered as beneficial."

It must, however, be allowed, that there are in many districts of this kingdom extensive, barren, and mountainous tracts of ground that are not capable of ever being inclosed with the least chance of advantage ; or which, if they could be inclosed, could never derive any amelioration or improvement from it : the only methods in which they can be bettered, is by being rendered in some situations more free from injurious surface moisture, by judicious drainage, or the introduction of better breeds of the several kinds of domestic animals which may be turned upon them. Some of the large sheep farms in different parts of Scotland, as in the shire of Peebles and the Highlands, are much in this state, no other sort of inclosing being necessary than merely a *ring fence*, or boundary round the different farms. And where any kind of inclosures become requisite within such fences, they are simply such as permit of the culture of a small number of acres for the use of the farmeries, or in the view of forming plantations for protection and shade, &c.

In other situations where the lands are capable of being cultivated almost constantly under the grain system, inclosing, at least with any kind of high fences, may, in a great measure, if not wholly, be unnecessary. But, in common, where lands are proper for being cultivated under a system of husbandry, such as that of alternating grass or other kinds of green crops with those of grain or root crops, and in that way having the means of combining improvement in the breed of live stock with that of the cultivation of grain, the practice of inclosing must always be necessary and advantageous in a high degree.

Yet, however advantageous in these different points of view the benefits resulting from the inclosing of lands may be, the practice is far from being so much promoted and attended to as its importance seems to deserve. And it is probable that this may in some measure have proceeded from the great difficulty that necessarily attends the business in almost every instance, and particularly where waste or common field lands are to be inclosed, on account of the great diversity of claims upon them, as well as sometimes from the improper management of the persons who have the direction of the business. Where inclosures of this sort are to be made, the circumstances that are chiefly to be regarded are those of the rights of the different classes of claimants, without any distinctions, the ascertaining fully the nature and extent of the land to be inclosed, the provision of proper cottages for the poor in the acts of inclosure, and the appointment of commissioners duly qualified for the execution of the business.

It has been remarked by Mr. Somerville, in a paper on the different modes of forming inclosures, in the second volume of "Communications to the Board of Agriculture," that inclosing has long been considered, and very justly, not only as a certain means of improving waste and uncultivated lands, but also as an essential requisite to the completion of improvements upon the best soils, and such as have been long under tillage. For whatever care or expence may have been employed in clearing, draining, tilling, manuring, weeding,

&c. the whole of the benefits resulting from these can never be completely united, while the soil remains in an open uninclosed state. When the fields are in grass they cannot be pastured to advantage without fences ; and when they are in tillage, the crops, of whatever kind they may be, are exposed to every injury that can be suffered from the encroachments of sheep, cattle, or other animals. In many of the counties throughout the kingdom, the features of this improvement are strongly marked, and the ideas of shelter, ornament, and increased produce, are visible to even the most superficial observer, and afford a very just comparative estimate of the advantages to be derived from inclosing, by contrasting the value of lands that are inclosed with others of the same quality that still remain in an open field state ; the saving in point of labour, the perfect security to the crop while the lands are under tillage, together with the warmth and shelter afforded to the stock and herbage when the fields are in pasture, form a striking contrast when compared with the open, unsheltered, unprotected, and unproductive state of uninclosed fields. Obvious as these advantages are, it is to be regretted that the system of inclosing has, in too many instances, met with much opposition ; and even in those cases where its benefits are clearly ascertained, much difference of opinion still exists, with regard to the nature of the fences requisite for different situations, the materials or plants that should be used, the best mode of executing them, and the season of the year most suitable for doing the work. The opposition so often made to bills of inclosure brought into parliament is a very striking proof of the former ; and the little judgment that is shewn in accommodating the fence to the natural circumstances of the fields to be inclosed is conclusive as to the latter. It too often happens that proprietors and farmers, without duly considering either the nature of their soil or its local situation, resolve upon and adopt a mode of inclosing which they have seen successful in other places, without once considering that the soil, climate, and other circumstances, which combined to render the plan successful in the situations they wished to copy, are totally wanting in theirs. Owing to this much money is expended and many attempts prove abortive ; the system of inclosing falls into discredit, and is considered as impracticable in many cases where good and lasting fences might be reared at the same, perhaps less, expence than such as have failed. The reason commonly assigned is the rigour of the climate, while the true and only cause is, the ignorance or want of discernment in the persons who make these unsuccessful attempts.

Indeed the mistakes committed in this way are innumerable. Sometimes live fences are planted in situations, and upon soils where it is impossible they can grow, far less arrive at perfection ; and where substantial stone fences could be made, not only at little expence, but the building of which, by collecting the stones, would rid the adjoining surface of a nuisance, and remove an incumbrance which too often constitutes a material bar to its cultivation. The discernment necessary to discover this is not great ; notwithstanding which, we too frequently have occasion to observe large fields inclosed, either with dwarfed, crabbed, ill-grown hedges, and rotten decayed palings, or with turf or earthen mounds, obtained by paring off the best part of the surface soil ; while the fields thus wretchedly inclosed by fences, which, on account of their inutility and perishable nature, must one day be abandoned, are covered with numerous large stones, the removal of which is an essential requisite to their improvement. The same circumstance often happens where live fences might be reared, which, in every instance where they can be brought to perfection, are to be considered as preferable . .

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preferable to any other. In place of making the hedge with such plants as are suited to the soil and climate, they are often directly opposite—dwarf, stunted, white thorn hedges being very frequently seen upon cold wet lands, and in bleak exposed situations; upon which, if beech, black-thorns, or crabs, had been planted, they would have grown readily, and made complete fences in a very short time. In other instances the fence fails, or becomes faulty, from circumstances which the planter may be disposed to consider as immaterial. For example, in inclosing a large field, a great part of the outline of which is wet, if white-thorns are planted in the ordinary way upon the common surface, they will never make a good fence; whereas by planting them in the face of the bank of earth thrown out of the ditch, being thus raised above the level of the field, and placed upon a dry bed, they thrive, and soon establish themselves; while upon very dry lands, with open bottoms that possess little capacity for retaining moisture, the hedge very often dies from an opposite cause. When the plants are set upon the mound raised above the common surface, if the season is but commonly dry, their growth is considerably impeded from the want of moisture; and in severe winters, from the porous nature of the soil, the frost gets access to the roots, and either kills whole rows or lines of hedges in a few weeks, or so far hurts them as to check their future growth and improvement.

And it is stated, that in perusing the different county reports, all the surveyors concur in opinion as to the utility of inclosures; but that it is mentioned by several of them, in terms of regret, that the obstacles thrown in the way of this valuable improvement, by ignorance and obstinacy, are great and manifold. In some cases they speak in terms of the highest panegyric of the utility, cheapness, and durability of certain fences, such as quicks, beeches, crabs, &c. when they are planted upon the soils to which they are respectively the best adapted; while in others they mention, in pointed terms, the perishable nature and transitory value of many of the fences employed, the annual expence required to keep certain descriptions of them in repair, (the dead hedges and pairings,) and the great extent of valuable ground that is occupied by the others, especially the inclosures made by double ditches with a bank between them and a hedge on each side, and of the common hedge and ditch, and hedge and bank, which, at the same time that they occupy a considerable space of ground, are very seldom good fences, in some instances covering thrice, and in others four times the space that a fence of a different kind would do, if properly kept. Great contrariety of opinion also prevails in regard to making trees a part of the inclosure, either in hedge-rows or belts of planting. From such diversity and opposition of sentiment, it is difficult to form any fixed or certain opinion upon the subject in question.

The different points to which the proprietor or occupier ought to pay particular attention, before he commences any plan of inclosure, would seem to be

- 1st. The nature of the soil.
- 2dly. Its present worth, and the increase of value expected from inclosing it.
- 3dly. The objects to be attended to in making inclosures; and whether the greatest value of the fences is expected to arise from their simply confining their stock, or from their affording shelter to both stock and crop, or from the union of shelter and inclosure.
- 4thly. The modes of inclosure suited to the natural circumstances of the soil, climate, &c.
- 5thly. The materials for making the fences, and the means of obtaining them. And,

6thly. Expence, which is another important point to be considered, but which must depend upon so many local circumstances, that it is impossible to form any estimates that could be of much service in guiding the improver.

Nature of the Soil.—In respect to this, a careful inquiry seems to be one of those requisites essential to the success of every plan of inclosure; for though there are, comparatively speaking, few situations, however elevated above the level of the ocean, and scarce any description of soil, where a good live fence may not be reared, with one sort of plant or another, yet it is an object of the first importance to know the plants best suited to every variety of soil, as, by a judicious choice of these, much loss and difficulty is avoided, and good substantial fences are made in a short time, and in many situations where, from a mistake as to the plants employed, the fence has languished for years, and ultimately perished, notwithstanding every care that could be bestowed upon it. In some instances, we have known twenty years experience barely sufficient to undeceive those who had made mistakes of this kind. In a few cases, however, where this obstinacy has given way to common sense and observation, and where the plants of which the hedge was originally made have been taken up, and others better adapted to the soil substituted in their room, these last have, without much trouble, made a good fence in a very short space of time, and with very little trouble.

It is well known that white-thorns, or quicks, as they are commonly called, are reared with great ease, and, under proper management, soon make useful and handsome fences upon all dry soils, provided the situation is not too high and exposed. In such places, though the plants do not perish entirely, they never attain the strength or vigour necessary to make a good fence. In cases where the natural surface of the ground is rather too moist for white-thorn, the excess of damp may be carried off by a ditch on one side of the plants in the usual way. In marshy situations, where a ditch on one side would be insufficient to lay the soil dry enough for the success of white-thorns, it ought to have a drain on each side of the bank on which the thorns grow, and which would be particularly favourable for the growth of ash-poles and various other sorts.

But in every case where thorns are planted upon the common surface without a ditch, and upon dry ground that has been previously prepared by dung, lime, &c. they grow better than where ditches are used, because the ditches serve as open drains to carry off the moisture, a circumstance which in dry seasons is often very detrimental to the growth of the hedge. Except in weeding, the thorns should not be touched for the first four or five years of their growth, unless it be to crop the most luxuriant of the lateral shoots: at the end of that time they should be completely trimmed and put into shape, leaving the top shoots untouched, till the hedge attains the necessary height; when this ought also to be cut over, and its farther growth upwards prevented by regular yearly cuttings afterwards. See FENCE and HEDGE.

And black-thorns, crabs, &c. may frequently be treated in nearly the same manner as the white-thorn. There is, however, one remarkable difference between them, which is, that both the crabs and black-thorns will thrive, and become good fences, in situations where the white-thorn would perish: upon *tills* and clays, for example, many fields of that description are completely inclosed with them, which could never have been rendered fenceable if white-thorns had been employed. Also, the holly, when properly attended to, forms a thick and beautiful fence, and has an advantage over most others in affording the same degree of shelter

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shelter at all seasons. It grows well upon all soils, but particularly upon deep and moderately dry loams. Its progress is, however, slow, even in the most fortunate situations, which renders it unfit for common use; unless in pleasure-grounds, or places where taste or fancy requires it. When intermixed with the white-thorn it is, however, more rapid in its growth, and forms a most beautiful kind of fence.

But the use of beech, for the purposes of fences, has not hitherto been very common; they are, however, fast coming into use, and perhaps will soon be the only kind employed in the uplands, or upon the cold wet soils in the lower districts of the kingdom; for these situations, so far as the experience of several parts of Scotland can ascertain that point, they are, it is said, remarkably adapted. In East Lothian there are several tracts of land, the soil of which is of a very inferior quality, that have had their value greatly increased, by inclosing them with beech hedges, upon which thorns were formerly tried without success, and much trouble and expence incurred in the attempt; while the beeches, which originally cost no more than the thorn, without any trouble, very soon become good fences. Along with their growing so readily in these unfavourable situations, they possess a property well suited to a cold or exposed country; namely, that of preserving their leaves through the winter, and indeed till an advanced period in the spring; by which they afford shelter to the grazing stock, and also to the pasture in the early part of the season, when it is apt to be hurt by the cold, nipping, frosty winds. The birch is likewise peculiarly adapted to cold clays, where it seldom fails to thrive, and form a good fence; some caution, however, is necessary as to the management of it. It is also said to be the only plant which succeeds in the sandy rabbit-warren land, such as is found in some parts of Suffex. In all cases where it is intended to cut or slash it, the operation should be done about the end of autumn, as the juices are at that time retiring to the root, and long before the circulation is again renewed the wounds are healed: whereas, when the cutting is deferred till the spring, or beginning of summer, when the circulation is going on, the juices flow out by the wound, and continue to run off in that way during the whole of summer; by which means the plants are so weakened and exhausted, that many of them die, a misfortune which is entirely prevented by cutting about the end of autumn, or during the winter season.

Upon all wet or marshy grounds, willows, alders, and poplars thrive, and are extremely useful in completing inclosures in many situations, where other plants would either perish entirely, or remain in a dwarf stunted state. In Huntingdonshire, and several of the fenny parts of England, these plants, in conjunction with the alder, form almost the only description of live fences that are met with: their value in those parts is well known; and in every similar situation throughout the kingdom, if proper trials were made, they would be found equally useful. Hedges made with willows have an advantage over almost every other, as, after the hedge has arrived at a certain height, and is properly laid down and bound together, the young shoots may be annually taken off, and sold to basket-makers for a considerable sum of money. They have another obvious advantage, namely, the ease with which they are propagated, being raised by simple cuttings, without any other trouble than that of merely sticking them into the earth. Where this is practised, and in most situations it may be done with great ease, the farmer or proprietor will not only have his fields inclosed, but the fence will be converted into a source of revenue, by the sale of the young shoots yearly. Where the Huntingdon willow is used, a farther emolument may arise to the

proprietor, by allowing a certain proportion of the plants to run up into trees; with very little care they soon arrive at a great size, and are of considerable value; the wood is soft, easily wrought into any form, takes a fine polish, and can be stained of any colour. The use of willows, poplars, &c. is not confined solely to wet or marshy grounds, they thrive upon almost every soil, and, indeed, make more progress upon such as are moderately dry than upon very wet lands; upon the latter, however, they grow better than any other plant, and on that account deserve a preference in many cases.

And the hazel, elder, &c. are plants which grow well upon all dry soils, and, if properly managed, by laying wattling, &c. produce wood enough to form a very sufficient fence; but their want of prickles render them less eligible than thorns. The elder possesses a property which, along with the beauty of its flowers, will give it a preference to most other plants in many situations; namely, that of its being propagated from cuttings, with as much ease as the common willow. Where the hazel is used for inclosing with, and the proprietor is disposed to take the necessary trouble, it may be rendered very useful, by cutting the hedge within four feet of the surface every second or third year, and felling what is cut off to coopers or basket-makers: hazels are well known to make the best and most durable hoops, and generally bring a high price for that purpose in most situations.

Though the larch has not hitherto been much used as a hedge plant; yet, from its growing so readily, and bearing the operation of clipping so well, it seems very much adapted for that purpose. In exposed situations, where thorns would fail, the larch would be found an excellent substitute, and many fields may be inclosed with it that would otherwise remain open. Where it is intended to inclose a field with larches, the plants made use of should be at least seven years old, and the strongest that can be obtained of that age. They should be taken up in the most careful manner, preserving the whole of the roots, and planted in a trench where a considerable quantity of dung or compost has been put. The most proper season for this operation is about the end of November, or in the early part of January; at either of which periods, if they are carefully lifted, and replanted without any destruction of the roots, they will suffer no check whatever, and grow readily and vigorously in the spring. It is worthy of notice that the tops ought never to be allowed to exceed the height of six feet; because, after they pass that height, the wind has so great an effect upon them as to destroy any binding that may be made with their lower branches; cutting the tops has also another beneficial effect, namely, that of making them push out more vigorously below. Larches have, however, one defect, in common with hazels and some other plants, namely, the want of prickles, which certainly impairs the value of any fence made with them; as neither sheep nor cattle are disposed to respect any hedge so much as those that are made with plants of the prickly kind.

The whin, or furze, is also a plant that is known to grow spontaneously, and attain a great size upon soils and climates where scarcely any other would live. In all cases where whins are found growing naturally, and of any considerable size, hedges of them may with safety be attempted: but as the whin seldom grows to any considerable height, hedges are not often made with it. This material, however, forms a good fence when a sufficient number of plants can be reared and brought to perfection; and, from its numerous prickles, very effectually prevents both horses, sheep, and cattle, from attempting to break through it. It has, how-

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ever, one defect, and that is considerable; being raised a good deal above the common surface, the plants are exposed to many accidents, arising from drought, frost, &c.; accordingly it often happens in severe winters, that whole lines of whin hedges are killed at once, and of course much labour and expence thrown away.

There are, besides these, several other kinds of plants, such as the bramble, mulberry, &c.; and various sorts of fruit trees and shrubs, such as the gooseberry, &c. that may be occasionally employed in the same intention with advantage, though they have not yet been much had recourse to in such a view.

Present Value of the Soil, and the Improvement of it by Inclosure.—It may be remarked that in every plan of improvement, whether by inclosing or otherwise, it is very material to ascertain the present worth of the land, and the probable increase of value that may be expected from the undertaking; for unless this point is judiciously weighed, the operations will proceed at random, and much labour and expence may be incurred without any adequate advantage resulting therefrom. For much and justly as the advantages of inclosing are extolled, (and they are unquestionably great,) there are certain circumstances of soil and local situation that bid complete defiance to this and every other attempt at improvement. For example, in high rocky situations, where the soil is not only thin, but of a bad quality, where the lands can never be subjected to the plough, and where the herbage is not likely to be much ameliorated by shelter, little benefit will be derived from inclosing. The only advantage resulting from the practice in such cases seems to arise from the saving of a shepherd's wages, which, when the flock are pastured in an inclosed field, is rendered unnecessary; but which, if accompanied with no other advantage, will be found a paltry equivalent for the expence of inclosing the soil. On the contrary, however high or exposed the situation may be, if the soil is of a good quality, and a species of plants can be met with of a nature so hardy as to bear the climate, the value of the property will be so far improved by the shelter arising from the fence, as amply to compensate the expence incurred in making it. In many of the bleakest and most exposed situations in Britain, the soil, though greatly elevated above the level of the ocean, is equal in quality to what is met with even in the most favoured situations, and for the most part requires nothing but shelter and judicious culture to render it highly valuable. In detailing the different kind of fences, especially that known by the name of hedge and belt of planting, an opportunity was taken of pointing out several instances, where the mode of inclosing has benefited the property so inclosed, in a tenfold proportion, in a very few years. Upon this point it remains only to hint, that every person, whether proprietor or farmer, should, before he commences his operations, pay very particular attention to the present value of property in an uninclosed state, and the extent to which it may be improved by inclosing; as without such previous knowledge, in place of being repaid by the pleasure arising from seeing the property ornamented and improved in proportion to the trouble and outlay of money, large sums will often, it is supposed, be expended, without adding to the general appearance of the country, or materially contributing to augment the value of the soil and property.

Objects to be regarded in forming Inclosures.—It may here be noticed, that, in some situations, all that is required is merely the confinement of the stock, in others, shelter to the stock and herbage are the principal objects; but in a great majority of cases, the union of both is necessary to complete the system of inclosing. In wild low situations perhaps a stone

wall, or a low thorn fence, will answer every purpose required, and produce every benefit that could be expected from the inclosure; yet these fences would be found totally incompetent to the purposes of inclosure in the hilly and upland parts of the country; for, though confining the stock might be completely answered by either, the important requisite of shelter would be entirely wanting. Other matters of equal importance ought to enter into the consideration of persons inclosing. The separation of the soils inclosed, so as to render that of each field as nearly as possible of an uniform quality, the separation of the stock as may be thought most advisable, together with the securing a sufficient supply of good water, are requisites so essential to the success of the undertaking as to entitle them to a high degree of attention. Mr. Donaldson, in speaking of inclosures, says, that the old fences were planned with a view chiefly to inclose soils as similar as possible within each division; beauty or regularity does not, he thinks, seem to have attracted much of the proprietor's or farmer's attention; utility, it would appear, they kept principally in view. Our modern improvers, on the other hand, in too many instances at least, shew an evident disposition to sacrifice utility to taste and regularity in appearance. Hence, it is not uncommon, in a new inclosed parish in England, or even in an estate in Scotland, where the proprietor has the sole power of management, to see several different sorts of soils in the same inclosure, which, with proper attention, and a little sacrifice of taste, might have been included in the adjoining fields with much greater propriety. Thus, in place of forming the fences in such directions as that the greatest advantage might have been derived, by not only inclosing and subdividing the estate, but also by separating, in every possible case, soils of different and opposite qualities, it not unfrequently happens, that the sands of Norfolk and the clays of Lincolnshire are, as it were, inclosed within the same fence; than which it is impossible to figure any management more improper. If a regular rotation of cropping be adopted on a farm where each inclosure contains a variety of soils, it will of course be suited to that sort which most prevails. When the most prevalent soil is of a light and sandy nature, the portions of better soil contained in each inclosure must be cultivated under a system, in regard to cropping, not the best calculated to produce the greatest returns. On the other hand, when the predominant soil is deep and fertile, that of a lighter nature must be exhausted, were a mode of cropping pursued calculated only for the soil of superior quality. Whereas, had a judicious arrangement been made in regard to the form of the inclosures, the good and bad soils might, in many cases, have been kept separate; and, as often happens, two rotations of cropping adopted on the same farm with equal propriety. Perhaps also fences in straight lines, in place of curves, might be disputed on the score of taste; but that is a question foreign to the object of the present investigation, which has utility only for its object.

The new inclosures differ as much from the old in regard to size as in form. The old inclosures generally contain from three or four to six or eight acres; few of such as can be properly denominated old exceed ten; while those that have been formed in latter times extend from ten to twenty, sometimes to forty or fifty. This difference in the size of inclosures is greatly, if not entirely, owing to the change of opinion in regard to what was and what now is considered by individuals as the proper size of farms. In the same, or nearly the same proportion as farms were enlarged, so were the dimensions of the new inclosures. The more ancient inclosures, such as those in several parts of Essex, Kent, Suffolk, &c. are evidently too small, while those in many other districts

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districts are too large. There is a medium in regard to the size of inclosures, as well as in other things; and to discover and adhere to it, as nearly as circumstances will allow, is certainly for the interest of the proprietors, the tenants, and the public. Where the inclosures do not exceed three or four acres, the quantity of land taken up in erecting the fences is a very heavy *per centage*, viewing the inclosure as a part of the farm, of the estate, or of the national territory. A free circulation of air is also prevented, especially if there be hedge-row trees, to such a degree, that it may be difficult to say whether the crops are more benefited or injured by the fences when so closely placed. As one of the most important advantages that can be derived from inclosing is shelter, large inclosures must, on the other hand, be equally improper. When a tract of thirty or forty acres is included within one fence, it would be absurd to suppose that the fence can afford the same shelter as if these thirty or forty acres had been subdivided into three or four fields. When the inclosures are made so large, the advantage of fencing, in so far as regards shelter, must be merely a secondary object with the person who erects the fence.

Having pointed out the loss and inconvenience arising from too small and too large inclosures, it may be necessary to suggest what, upon the whole, ought to be considered the best size. This it is proposed to do on the authority of Mr. Bakewell, from whom the British farmer might have learned many useful lessons on subjects connected with husbandry. Besides what related more especially to the improvement of the different species of live stock, it was the opinion of that expert farmer, that fifty acres of pasture, divided into five inclosures, would go as far in grazing cattle as sixty acres all in one field. If there was a man in the island that exceeded another in knowledge as a breeder and grazier, it was Mr. Bakewell; his opinion, therefore, founded on the experience of many years, may be considered as conclusive in regard to the proper size of inclosures, in so far as the breeder or grazier is concerned; and from what is above stated, it appears that from eight to twelve-acre fields are best calculated for either of these purposes. Mr. Marshall also, in corroboration of this, hints in his "Rural Economy of Gloucestershire," that the most experienced dairy farmers in that district consider what he calls a suit of pastures as a more profitable mode of pasturing cows than one large inclosure. As no farm can be kept constantly in tillage with advantage, and as the best mode of cropping that can be adopted for the generality of soils is, in his apprehension, that by which nearly the one-half of the farm is in tillage, and the other in pasture, it is necessary, in determining the proper size of inclosures, to have regard to the two great branches of husbandry, namely, grain and grass. In regard to the latter, so far as the practice of the two counties most remarkable for grazing and dairying can go, the matter seems determined; and in respect to corn husbandry, as middle-sized inclosures enjoy the advantage of shelter to a greater degree than those of larger size, and a more free circulation of air than those of small dimensions, there can be no reason to hesitate in determining, that the size of inclosures best suited for the breeder, the grazier, and the dairyman's purposes, will also best answer those of the cultivator of grain.

Modes of inclosing suited to the natural Circumstances of the Soil, &c.—It is stated by Mr. Somerville, in the work already mentioned, that this matter has been in some degree discussed in the preceding article of inclosure. There cannot, however, remain a doubt that the success of every attempt that is made in the way of inclosing must in a great measure depend upon the discernment of the person who

undertakes it. A material consideration in such cases is, to determine whether live or dead fences are the most eligible or best suited to the natural circumstances of the soil. The former comprehends every fence made with growing plants; the latter includes not only the different kinds of wall or dike made with dry stone, stone and lime, stone and clay, turf, &c. but also the different kinds of dead hedges and palings. Into this estimate ought also to enter the comparative usefulness and durability of each, together with the first cost. In general, the first class, namely, live fences, where the plants are properly chosen, and well adapted to the soil, are uniform in this respect, that, under proper management, their value is yearly increasing: while that of even the best-constructed dead fences is annually growing less. Where they consist of dead hedges or palings, their decay is certain, and commonly rapid; and even when they are constructed with stone and lime, which are by far the most durable of that class; though they make perfect fences at once, and the proprietor or occupier enters into immediate possession of every advantage that can arise from them, yet from the hour they are built their decay commences, and, after the first few years, a regular and progressive expence is incurred to keep them in repair in a proper manner.

It is asserted, that in all upland situations, the first class of fences will be found the best: of that class, however, the beech hedge, and hedge with a slip of planting, deserve a preference, as they unite in the highest degree the important requisites of shelter, ornament, and inclosure. The beech, under proper management, attains a great size even upon the poorest soils, and soon forms a useful fence in situations where thorns and other kinds of hedge plants would either perish or remain in a dwarfish state; with this additional material advantage, that, by keeping its leaves during the winter, it affords shelter to the stock and pasture at the most inclement season, and when it is most wanted. The inclosing fences in these situations should likewise be high in order to produce the greatest effect and utility. But that in low situations, where little is to be apprehended from the want of shelter, thorn hedges kept low, or any of the different kinds of stone walls, will answer every purpose; and as the soil in these low situations is for the most part of very great value, those fences, from the little space they occupy, will be found preferable to every other kind.

Materials for forming the Fences, and the Means of providing them.—In speaking of the nature of the materials for making fences, in the above observations upon the modes of inclosing suited to the natural circumstances of the soil, it has been pointed out what appeared the best, upon the supposition that the materials could be readily obtained at a reasonable price. In many situations, however, the scarcity and apparent want of many of these materials form an almost insuperable obstacle to inclosing upon the plan above hinted at. For instance, in the remote parts of the kingdom, where the different kinds of trees and hedge plants are either very scarce, or not attainable but at an enormous price, it will often be found necessary, in the inclosing of upland districts, to surround the fields with stone walls in place of hedge, or hedge and slip of planting; and in not a few situations in the low lands, where stone walls would be the most eligible fence, from the scarcity of that article, hedges, or hedge and ditch, are had recourse to. Under such circumstances necessity is the law; and the person inclosing must accommodate his plans to his resources. It will, however, frequently happen, that the materials wanted will be met with upon the spot, not only without expence, but with much advantage to the property; as in cases where the

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Fields are infested with stones, their removal will at once facilitate the improvement of the field, and furnish good materials for inclosing it. But even where the resources are less visible, and there are no stones upon the surface, by a careful examination of the sub-stratum plenty may often be met with; or, in defect of these, clay for making either bricks or mud-walls may be had merely for the trouble of digging or getting it up.

In forming other kinds of dead fences for inclosing lands, such as palings, hedges, &c. materials for constructing them may be procured in almost any situation, from the thinnings of young plantations, from coppices, and the cutting down of old hedges; even the deficiency of hedge plants and young trees might be, in a great measure, if not entirely, got the better of, if every proprietor were to have a small nursery for raising them for his own use, and that of his tenants. To the convenience and saving of expence with which this practice would be attended, we have to notice an unspeakable advantage, namely, that arising from the use of plants propagated in, and inured to, the climate where they are afterwards to grow. It must require little knowledge of the subject to convince any one, that plants, of whatever kind, reared in the upland and hilly parts of the kingdom, will thrive better than such as have been reared in the warmest and most sheltered spots. To what, it is asked, are we to ascribe the amazing size and luxuriant growth of many trees in the islands of Scotland, or even in Norway or North America, but to the circumstance of their having come into existence in the climate and situation where they were afterwards destined to grow; and by being thus early inured to the climate, became, to all intents and purposes, indigenous plants.

It may in addition be remarked, in regard to adapting the plants to the soil, that it is not the least important consideration with persons inclosing, after having determined whether live or dead fences should be used, to make choice of the plants best suited to the soil. In the flat low parts of the country, where the soil is loamy or gravelly, and at the same time moderately dry, and not greatly exposed to any prevailing winds, white-thorns will be found both the cheapest and the best. Hazel, elder, and a multitude of others, might be used for that purpose in these situations; but they are liable to objections to which the thorn is not. If in these low situations it is meant to plant trees along with the fence, either in hedge rows or belts, the dry soils should, it is observed, be planted with oak, ash, elm, plane-tree, chestnut, beech, &c. and the moist parts with poplars, and the different kinds of willows; by such means the whole will thrive, and in a short time become valuable to the proprietor. In the upland and hilly parts of the country, unless the soil is wet indeed, the hedge plants should consist either entirely of beeches, or a mixture of beech and larch; the last is known, as has been seen above, to answer well in these exposed situations, and not only endures planting and clipping without injury, but thrives remarkably under these operations; where the soil, however, is wet or spongy, a different description of plants should be used; willows of different kinds, poplars, birch, or alder, will then be found the best, and ought, in preference to every other, to be made use of. By thus adapting the plants to the soil and climate, few plans of inclosure will prove abortive in any situations so far as the fencing it is concerned.

Expence of performing the Work.—It is obvious that this must be extremely various according to the nature of the situation and other circumstances; but it will seldom be very great where due care is taken in the direction and execution

of the business; and the necessary materials are capable of being had near at hand, and in sufficient abundance.

From the perusal of the different surveys now in possession of the Board of Agriculture, it would appear, that, in almost every county throughout the kingdom, considerable tracts of the soil are inclosed; and that many plans of additional inclosures, to a very considerable extent, are now in contemplation. The surveyors appointed by the Board are unanimous in their approbation of the system, which they represent as so beneficial in its consequences, that in many cases the value of the property has been thereby increased in a fourfold proportion, and, in some well-authenticated instances, considerably more. The inclosing fences at present in use are of great variety; and a part of them, particularly such as have been made of late years, executed in a handsome substantial manner, uniting at once the important points of shelter, inclosure, and ornament. The appearance of these, owing to the judicious manner in which they are managed, convey to the mind the strongest ideas of permanent and valuable improvement. The different kinds of stone-walls, by having a broad foundation sunk deep enough in the earth to place them beyond the reach of frost, tapering gradually upwards, and secured at top with a proper coping, are found to last many years, with but very slight repairs. The hedges, from the circumstance of their being planted at a proper season, the plants made use of adapted to the nature of the soil, and afterwards kept in order by regular weeding and trimming, are of immense value, and form the most beautiful and lasting fences that can be imagined. Many other descriptions of fences are equally perfect and valuable; but though these circumstances are mentioned with much satisfaction, and must give pleasure to every person who feels, or has the smallest interest in the improvement or welfare of his country, it is with pain remarked, that in too many instances the system of inclosing is extremely defective; and much less solicitude has been shewn to secure and unite the whole of the benefit to be derived from it, than the importance of the subject deserves. To confine the stock seems, in too many instances, to have been the sole object; while the weightier matters of shelter, both for the stock and pasture, separation of soils, separation of stock, and many other points of equal importance, have been entirely overlooked. In too many instances, no attention has been paid to the natural circumstances of the soil intended to be inclosed. High inaccessible walls, belts or slips of planting, and hedge rows of trees, being very often met with in the lowest and warmest situations, where little or no shelter is necessary; while in the hills and uplands, and along the sea-coast, where shelter is indispensable, both for the stock and pasture, and where its advantages are incalculable, the fence very often consists of a naked stone wall, which, though it may, and indeed does answer the purpose of confining the stock, possesses no other advantage; and many tracts of immense extent, the value of which might be improved in a tenfold proportion by hedges and belts of planting, exhibit a naked bleak appearance, and continue exposed to every blast. The loss and disadvantage attending this injudicious mode of inclosing are strikingly obvious. In the low warm parts of the country, where the land is of immense value, much of it is occupied by fences which the nature of the situation does not require, while in the more elevated and exposed parts, where shelter is the *sine qua non* of improvement, and where the land occupied by the fence is, comparatively speaking, of small value, the fence, in place of affording the necessary shelter both to the stock and pasture, is barely adequate to the purpose of inclosing the field. Under such circumstances, the pasture will for the most part be scanty;

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scanty; and neither a breeding nor a feeding stock will make half the progress upon it that they usually do in cases where they enjoy the benefit of complete shelter. A defect equally injurious to the proprietor or occupier, and highly inimical to permanent improvement, seems also to prevail in the choice of the materials of which inclosures are generally made. In every instance where circumstances will admit of it, present use ought, if possible, to be united with durability in the formation of every fence; an attention to this is, however, too often totally wanting, both with proprietors and farmers. Provided the present purpose is answered, future consequences are disregarded; and neither a knowledge of the perishable nature of the materials made use of, which daily experience presents to their view, nor the frequent and heavy expences to which they are put for repairs, have been sufficient to make them alter their system. Amongst these perishable fences are to be ranked the different kinds of earthen and mud walls, of turf, of turf and stone, together with the whole of the wooden fences, comprehending the different kinds of paling, dead hedges, &c. It is added, also, that the ancient custom of inclosing fields with high earthen banks or mounds, sometimes with and sometimes without a paling on the top, which prevailed formerly in many parts of England, and which is now pursued in the north of Scotland, though it did very well as a rude essay in the way of improvement, when other modes of inclosing were either unknown or imperfectly understood, and might for a time answer the purpose, either of confining the grazing stock while the field was in pasture, or protecting the corn crops when it was under tillage, is perhaps the worst and most perishable of all inclosing fences. After being reared with much labour, and committing a theft upon the adjoining surface, which is pared off to a considerable distance on each side, it remains but a very few months, or even weeks, in a perfect state; indeed, from the moment it is made it begins to decay: and the operation of the weather upon it, for a few years, renders it useless as a fence. Accordingly in many parts of the island the remnants of such fences are met with, which, though they were originally of considerable height, and to appearance strong and formidable, are now so completely beat down and levelled by the action of the weather, as to render it in some cases a matter of difficulty for the curious to trace their foundations, or the direction in which they formerly ran. The case is the same with walls formed entirely of turf, or a mixture of turf and stone. These, though made at considerable expence, and, as has been already noticed, by robbing the neighbouring surface, are equally perishable as the simple earthen mound. Upon whole farms, and even estates, that were formerly inclosed with turf, or stone and turf walls, nothing now remains but their vestiges, which, while they exhibit a striking proof of their perishable nature, afford at the same time a salutary lesson to proprietors and others, to beware of such temporary expedients; as, however cheap such fences may be in the first instance, in their best state they are but imperfect, and in the end are the worst and most expensive of any. An equal defect, it is asserted, prevails in many instances where the inclosing fence is entirely of stone. When the walls, in place of having a good foundation sufficiently removed beyond the reach of frost, broad at bottom, tapering gradually upwards, and finished at top with a substantial coping of flag-stones and lime or turf, so formed as to prevent the decay of the building, are in many instances built upon the plain surface, with scarce any taper towards the top, and without any coping at all, except

perhaps a slight one of turf, which soon moulders away, and, if the wall is built with lime or clay, permits the moisture to soak down and destroy it. The same improvidence and want of judgment discovers itself in carrying these walls through every kind of soil, wet as well as dry. In the formation of extensive inclosures, it very often happens that a part of the line in which the inclosing fence is to run is wet and spouty; in place of paying attention to that circumstance, discontinuing the wall where the dry land terminates, and either attempting to lay the spouty parts dry by draining, or plant a hedge of willows, poplars, or other plants adapted to wet soils upon the surface, the wall is too frequently continued through the whole. The consequence (as may very naturally be expected) is, that the wall, for want of a solid dry foundation, soon tumbles down, or is continually needing repairs. Along with this inattention to the shape of walls, considerable loss arises from building them with round, or what are termed land-stones. These, from their shape, are incapable of presenting a sufficient extent of surface to each other to bind them, or give stability to the building, by which means it seldom lasts long, though clay, or even lime is made use of. The practice of mixing clay is particularly inexpedient, as in general the first winter's frost, or a long continued series of wet weather, saturates the clay so completely, that the wall swells, bursts, and is thrown down. And the practice of inclosing with the different kinds of dead hedges and palings is productive of equal loss both to individuals and the community. Were these fences made to answer only a temporary purpose, such as protecting a young hedge, &c. &c. the loss would not be great, as their original value is small, and, long before they were totally decayed, the hedges they were meant to protect would be so far advanced, as to make good fences without their assistance. From the refusal of the different reports, however, it appears that in many of the English counties they are resorted to in cases where permanent plans of inclosing are intended, and are the only fence made use of. The surveyors who have noticed the practice are unanimous in their disapprobation of it, and represent the fences as perishable, and in the highest degree expensive. In several whole districts, dead hedges of different kinds form the only fence, and occasion an annual expence upon the property so inclosed, amounting from a fifth to a tenth part of the rent. Nearly an equal loss and expence is incurred in inclosing with paling; and what adds to the regret that arises from the observation of this ruinous practice is, the soil and climate in most cases where it prevails are well calculated for the growth of live fences. It is evident that what is said above will be considered by the public at large as a reproach, and will be felt as such by those concerned. We admit that the feelings of individuals ought, in every instance where it is compatible with the public welfare, be respected; but where either their opinions or practices are hurtful to the country, or hostile to its improvement, they are justly reprehensible. Forbearance in such cases is vice; and though exposing their faults may, in some instances, cover them with shame, yet the task is necessary; and by fixing the attention of the public upon the subject, has very often the effect of preventing the most serious abuses and bringing about valuable improvements.

Where wet ditches constitute the fence, either in their simple state, or as making a component part of another fence, such as ditch and hedge, &c. due attention has in very few instances been paid to secure every advantage that might be derived from their use. Proceeding without judgment,

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judgment, the ditches in many counties are made equally deep and wide upon wet and dry lands, from an erroneous opinion, that the drainage of the field, and the future prosperity of the hedge, require a ditch of certain dimensions. In place of laying off the field in such a style as to make the ditches subservient to the purposes of drainage as well as inclosure, they are frequently dug at random, of an uncommon depth and width, with a high bank or mound of earth on the side next the field, so strong and thick that no water can find its way through it. In that way the ditch, in place of acting as an open drain for carrying off the water from the adjacent fields, acts as a kind of barrier to prevent it from getting away; while, from the want of a proper level and outlet, when once filled it becomes a kind of reservoir; and by continuing filled with water three parts of the year, chills the roots of the inclosing hedge plants so much, that they either perish entirely, or remain small, stunted, and diseased. In this place it may be necessary to observe, that the use of ditches as open drains has in many instances been completely misunderstood. In most of the old inclosures they were thought valuable only in proportion to the quantity of water they were capable of containing, without considering whether they were so situated as to convey that water to a proper outlet. In the Reports of the counties of Ayr and Stirling, these deep and wide ditches are described, and their defects noticed: in the former county they are from six to eight feet wide, and of a proportionable depth; and in the latter, they are in many cases upwards of twelve feet wide. The quantity of valuable ground occupied in that way, over such extensive districts, must be immense; and when to this is added the injury done to the hedges from their roots being chilled, and the inconvenience arising from having a tract of country so much cut and intersected by these canals during winter, which prevents all passage through them, and the danger of weak horses or cattle, or even unfortunate travellers, who mistake their road in the dark, falling into them (circumstances which unfortunately too often occur), together with the expence of making such deep excavations, it will readily appear that the practice is bad, and that every purpose both of drainage and inclosure might be answered, at perhaps a fourth part of the expence, and without any of the risks or inconveniences we have mentioned. See FENCE and HEDGE.

It is further remarked, that in many parts the defective method of rearing and managing the hedges is no less striking. In place of making the whole hedge of one kind of plants suited to the nature of the soil, and such as, when arrived at a certain age, are capable of making a good fence, the inclosure is frequently surrounded with a motley mixture of shrubs, many of which, even in their most perfect state, are unfit for making a fence; while others, though they might have answered that purpose pretty well if the whole fence had been made with them, yet, from the circumstance of their being mixed with others, which not only come into leaf, but also shake their leaves at a different season, both hurt each other's growth, are offensive to the eye, and take from the general appearance of the country. Such, however, are the fences in some parts of the finest counties in England, where, upon the top of a high bank that has been raised by robbing the adjoining ground of its soil, a motley hedge, consisting of various plants, is met with, full of gaps filled up with stones or dead wood, forming a very insufficient fence, either for the purpose of confining the stock while the field is in pasture, or of protecting the crops while it is under tillage. In other cases, when the plants of which the hedge consists

are of one kind, it too often happens, that they are by no means suited to the nature of the soil. For example, in inclosing a large field where a part of the line of fence is perfectly dry, and a part of it wet and swampy, in place of planting quicks or white-thorns upon the dry spaces, and willows, poplars, birches, or such plants as thrive in damp situations upon the wet parts, the whole field is often surrounded with thorns, greatly to the hurt of the proprietor and occupier; as upon the dry land the thorns thrive, and in a few years make a good fence, while upon the wet parts they either fail entirely or are good for nothing; whereas, with a little judgment in accommodating the plants to the soil, planting quicks upon the dry land, and willows, poplars, &c. upon the spouty and swampy parts, the whole would thrive, and there would be no defect in the line of inclosure. To this mistake (a want of judgment in accommodating the plants to the soil) are to be added the defects which commonly take place in the after-management and training of hedges. It is now well known, that the whole, or the greatest part of the plants of which hedges are made, if left to themselves without pruning or weeding, run up to a considerable height, grow broad and bushy at top, and become open and naked at bottom. To prevent this there is no remedy known, but that of cutting over the main stems of the plants of which the hedge consists, after they have attained a certain height, and pruning or trimming the lateral branches in such a way as to preserve the hedge thick and broad at the bottom, and give it a gradual taper towards the top. But in place of this management, the hedge, in most instances, after being planted, is abandoned to its fate, and neither weeding, pruning, nor indeed any other attention bestowed upon it: in that way a number of the plants are either choked by weeds, or remain in a dwarf stunted state; and such as survive this usage are allowed to shoot up at random, and soon attain a great height without being useful as a fence, and by the spreading of their branches at top, not only become naked and open below, but cover three times the space of ground that hedges differently kept usually do.

It may be observed, in general, in regard to the directions of the inclosing fences, that they should run up the sides, and immediately across the tops of the elevations, by which their heights are in appearance considerably increased. But in some cases it may be better to carry them in an oblique manner across, as affording greater advantage in the direction of the ridges and in producing shelter and shade. They have in common the most beneficial effects in the level and valley lands, when they are placed in a parallel direction to the rising grounds, and when they intersect one another at right angles, and where the inclosures approach nearly to perfect squares. See FENCE and HEDGE.

In addition to the various advantages that have been already mentioned, the inclosing of land enables the farmer to act as is the most suitable and convenient in respect to the cultivation of his different crops, as well as to pursue various other plans of good husbandry that could not otherwise be attempted.

In cases where farms are to be inclosed, it will be advantageous to begin with having a survey and plan made, that they may thereby be divided and proportioned out with greater propriety and precision, so as to render them pleasing to the eye and convenient to the farmer; and if there be places of residence upon them, the whole of each may be made to become ornamental to the residences, by a judicious disposition of the hedges and plantations. And when there are different farms, they should be so divided, that
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the dwelling of each tenant may be as contiguous to his land as conveniency will admit of, in order to prevent length of carriage, and to facilitate attendance, labour, &c. See *Waste Land*.

INCOGNITA, in *Natural History*, is a term which has frequently been applied to the animal and vegetable remains found imbedded in the strata of the earth, from the circumstance of their not agreeing, when examined with sufficient care to minutely discriminate, with the known existing species to which they bear a resemblance in many instances: it has been thought by many late naturalists, that all the reliquia of the strata are incognita, or belong to extinct and unknown races of organic beings, sometimes called the primitive creation, and the antediluvians, but not with propriety, because the animals and plants that existed before Noah's flood were of the very same kind as we now have.

INCOGNITO, a term borrowed from the Italians, used when a person is in any place where he would not be known; but it is more particularly applied to princes, or great men, who enter towns, or walk the streets, without their ordinary train, or the usual marks of their distinction and quality; or when they travel without their proper titles.

The grandees in Italy make a common custom of walking the streets incognito; and always take it amiss, on such occasion, when people pay their compliments to them. It is not barely to prevent their being known that they take these measures, but because they would not be treated with ceremony, nor receive the honours due to their rank.

When the horses in princes, cardinals, and ambassadors coaches have no tassels, which they call *fiocchi*, and the curtains, which they call *bandinelle*, are drawn, they are reputed to be incognito; and nobody that meets them is obliged to stop, or make his honours to them.

The cardinals also, when they would be incognito, leave off the red hat.

INCOMBUSTIBLE, that which cannot be burnt or consumed.

Metals melt, stones calcine, and are yet incombustible. Cloth made of lapis amianthus (see **AMIANTHUS**) has been deemed incombustible: it is cleaned by fire, but not burnt. See **ASBESTOS**, and **LINUM Incombustibile**.

INCOMBUSTIBLE Lint, a name given by authors to a peculiar kind of asbestos, or earth flax, which never is formed into compact masses as the other species are, but is always found in loose filaments, and those of a very flexible nature, and extremely fit to work.

This is a kind of asbestos, wholly different from the species known to the ancients, and is found, so far as is yet known, only in the county of Aberdeen in Scotland, in the neighbourhood of Achintore, near the Highlands. See **ASBESTOS**, and **LINUM Incombustibile**.

The fabricating a cloth of this substance has not yet been attempted; but Mr. Wilson, who first discovered it, had some of it spun into yarn, which gives proof that the other is practicable. Phil. Trans. N^o 276. p. 1005.

INCOMBUSTIBLES, Simple, in *Chemistry*, are those whose characteristic property is a strong tendency to unite to oxygen: the combination is not accompanied by the emission of heat and light, and the compounds formed are capable of supporting combustion. (See **SUPPORTERS**.) Only two substances possess this character, namely, **AZOT** and **MURIATIC Acid**, which see.

INCOMBUSTIBLE Wood, in *Natural History*. Dr. Grew, in

his Catalogue of the Rarities in Gresham College, p. 269, mentions pieces of wood half petrified, which held in the fire become red like a coal, but do not flame or smok.

INCOMMENSURABLE, a term in *Geometry*, used where two lines, when compared to each other, have no common measure, how small soever, that will exactly measure them both.

In the general, two quantities are said to be incommensurable, when no third quantity can be found that is an aliquot part of both; or, when those quantities are not to one another as unity to a rational number; or as one rational number to another. See **COMMENSURABLE**.

The side of a square is incommensurable to the diagonal, as is demonstrated by Euclid; but it is commensurable in power, the square of the diagonal being equal to twice the square of the side.

Pappus, lib. iv. prob. 17, speaks also of incommensurable angles. Surfaces which cannot be measured by a common surface, are also said to be incommensurable in power. See **DIOPHANTINE Problems**.

INCOMPATIBLE, that which cannot subsist with another without destroying it.

Thus, cold and heat are incompatible in the same subject; the strongest overcoming and expelling the weakest.

INCOMPATIBLE Benefices, in *Law*, are those which cannot be retained together, if they be with cure, and of a particular value in the king's books. See **CHAPLAIN**.

INCOMPLEX OPPOSITION. See **OPPOSITION**.

INCOMPOSIT, in *Music*, is a term used by Euclid to express such intervals in certain Greek scales of music, as resulted or were required to make up the whole diatessaron or minor fourth. In the chromatic molle, the incomplex interval, which, with two **TRIENTAL Dies** (see that article), is required to complete the tetrachord, being the difference between a fourth and two-thirds of a major tone, is $184\frac{2}{3}\Sigma + 3\frac{2}{3}f + 16m$, or $184.61678\Sigma + 4f + 16m$, its common logarithm is .9091629.4502, and in those of Euler or decimals of the octave .301755, and it contains 16.83717 major commas. According to Holder's treatise, 11^e edit. p. 101, this incomplex interval was rated by Euclid to contain "a tone and half and a third part of a tone," which is $1\frac{5}{2}T$, but this is $190.62071\Sigma + 4f + 16m$, and differs more than half a comma from the above, and is one among the many instances in which it will appear, that even this prince of mathematicians had but imperfect ideas of the comparative values of furd or fractional musical intervals, to which the modern invention of logarithms has opened so easy a road. See **INTERVAL**.

INCOMPOSIT of the Chromatic Sescupulum, in the *Greek Music*, is the excess of the fourth above one-sixth part of a major tone, which in Mr. Farey's notation is $219\frac{3}{2}\Sigma + 4\frac{3}{2}f + 19m$, or $219.38322\Sigma + 4f + 19m$, its common logarithm is .8921121.0420, its Euler's log. = .358397, and it contains 19.99746 major commas. Euclid is said to have represented this incomplex interval as being seven of his diesis quadrantal, or $1\frac{1}{2}T$, which, however, is $182.072864\Sigma + 3f + 16m$, and consequently differs more than three commas from it: another instance of what has been observed above. See **INTERVAL**.

INCOMPOSIT of the Diatonic Molle, is the excess of the fourth above $1\frac{3}{4}$ major tone, which is $72\Sigma + 1\frac{1}{4}f + 6\frac{1}{4}m$, or $71.927136\Sigma + 2f + 6m$: its common logarithm is .9645781.7767, and its Euler's or binary log. = .117671, and it contains 6.56564 major commas. Euclid states this to be equal to three quadrantal diesis, but which is $\frac{3}{4}T$, or

$78.072865 \Sigma + f + 7 m$, and differs more than half a comma from the above.

INCOMPOSIT *Ditone of the Enharmonic Genus*, is the excess of a fourth above half a tone major, or $3^2 \div 8 \sqrt{2}$, which is $202 \Sigma + 4f + 17\frac{1}{2} m$, or $202.00393 \Sigma + 4f + 17 m$, whose common logarithm is .9006375.2462, and its Euler's log. = .330076, and it contains 18.41741 major commas.

INCOMPOSITE NUMBERS are the same with what Euclid calls *prime numbers*. See **PRIME** and **NUMBER**.

INCOMPOSTO, *Ital. uncomponded*, which see.

INCONCINNOUS, in *Music*. Discords are distinguished into concinuous and inconcinuous intervals; the concinuous are such as are practicable and fit for music, having a good effect when combined with concords according to the rules of harmony. The other discords that can have no admission in music are called inconcinuous, as being out of proportion, and making no part of the scale. (See **DISCORD** and **PROPORTION**.) Systems, in ancient music, are also divided into concinuous and inconcinuous; a system is said to be concinuous, or regularly divided, when the parts considered as simple intervals are concinuous, that is, when singly used in melody, or combined in harmony.

INCONCINNOUS Intervals, according to M. Hensling, are such as are a comma flatter or sharper than perfect; such are also called deficient or redundant, or comma-deficient and comma-redundant intervals, and are marked with a grave or an acute accent, as $3'$ or $4'$. Dr. Callcott observes, in the *Overend MS.* vol. vi. p. 92. in the library of the Royal Institution, that of the six inconcinuous intervals $3'$, $6'$, $4'$ and $3'$, $6'$, and $5'$, the $3'$, $5'$ and $6'$, $4'$ are used in harmony, but the $3'$ and $6'$ only in the melody of modern music. Of the inconcinuous scale of Aristides, an account is given in vol. i. p. 201 of the manuscripts above quoted.

INCONCINNOUS System. See **SYSTEM**.

INCONSONANCE, in *Music*, is of the same import nearly with dissonance, or a jarring and unpleasant sound.

INCONTINENCE of URINE implies, in *Surgery*, an inability of retaining this fluid in the bladder, so that in some instances the patient's water dribbles away incessantly; in others only a frequent discharge of it is made; but in all cases, the evacuation is quite involuntary, and not under the controul of the will.

Sometimes the urine dribbles away continually, while the patient not only has no inclination to void it, but even no sensation of its being voided. In other examples, the patient can hold his water in a certain degree; but the propensity to evacuate it comes on so frequently, suddenly, and irresistibly, that the bladder immediately empties itself, notwithstanding the dictates of the will, and every effort on the part of the patient to the contrary. Another kind of incontinence of urine only happens in the night-time, when the patient is asleep.

Women are more subject than men to an incontinence of urine; but, on the other hand, they are less frequently troubled with retentions. The reason of this circumstance admits of satisfactory explanation, by adverting to the large size and shortness of the female urethra, and to the general causes depriving patients of the power of containing their urine.

1. We shall first speak of the incontinence of urine attended with a weakness or paralytic affection of the sphincter vesicæ muscle. As, in this case, the neck of the bladder is, as it were, constantly open, the urine escapes through the urethra immediately after it has descended from the ureters. Sometimes the weakness, or paralysis of the sphincter is entirely a local defect; on other occasions, it is merely a symptom

of another general disorder. In the first of these examples, the affection of the sphincter is frequently the consequence of a difficult labour, in which the neck of the bladder has sustained injury from the long and great pressure made upon it. A paralysis of the sphincter may also be an effect of the laceration and violent distention of the neck of the bladder, in extracting a stone from this organ in the operation of lithotomy. Here it is proper to remark, that the evil may generally be imputed to the misconduct of the surgeon, who, after neglecting to make a sufficient division of the parts with his cutting instruments, drags out the stone through the inadequate opening *tois viribus*. Indeed, we have seen some old greyheaded operators whose fair exertion of strength has been unequal to draw out the stone, and who have only succeeded by dint of their weight, in other words, by leaning backwards and hanging on the forceps. Every deliberate surgeon who knows how often lithotomy proves fatal from manual roughness and violence, must acknowledge that such operators almost deserve another kind of hanging, and that the tumble backwards to which they are commonly exposed, would hardly be a sufficient punishment for their awkwardness and ignorant barbarity. It is not only the duty of the surgeon to make an ample and direct opening into the bladder, he ought to draw out the stone in a slow and gentle manner, so as to afford an opportunity for the parts to yield as much as possible.

Much danger, and serious injury of the neck of the bladder, are likewise frequently ascribable to the stone being forcibly extracted with its long axis across the wound. So zealous and eager are many operators, that when once they get hold of the calculus, they never let it go again, whatever may be the position in which it is grasped. Fearful of losing time, or perhaps of never being able to seize the foreign body again, they keep fast hold, and are only able to effect the extraction by the most awkward and unwarrantable violence. (See **LITHOTOMY**.) The present kind of incontinence of urine is often a consequence of the debility incident to old age. Sometimes the disorder proceeds from the destruction of the sphincter muscle by ulceration. Instances occasionally present themselves where an analogous incontinence of urine happens from congenital malformation, the fluid escaping through a preternatural opening, which is unprovided with any sphincter. The complaint may be attendant as a symptom upon all other diseases, which are accompanied by loss of sensation, lethargic complaints, delirium, or extreme debility; it is frequently induced by apoplexy, and injuries and diseases of the vertebræ and sacrum.

Although the infirmity is not in itself attended with danger, it occasions considerable inconvenience. The constant dribbling of the urine keeps the patient's clothes continually wet, produces a very unpleasant smell, and gives rise to inflammation, excoriation, and ulceration of the adjacent parts.

It deserves remembrance, that in women, and persons of advanced age, a mistake may easily be made concerning the real nature of the case. What is frequently supposed to be in elderly people an incontinence of urine, is, in fact, often quite the contrary, namely, a retention of urine, accompanied by a paralysis of the bladder. When this receptacle is full, some urine always makes its escape against the will of the patient, and at length such involuntary discharge becomes incessant, in consequence of the bladder remaining continually full. With regard to females, who, after difficult labours, are afflicted with an inability of retaining their water, practitioners generally conclude without hesitation, that the infirmity is dependant upon a paralysis of the sphincter muscle, while it not unfrequently proceeds from

a fistulous opening, formed between the bladder and vagina, in consequence of a slough, or ulceration.

In cases where the weakness or paralysis of the sphincter vesicæ is altogether a local affection, the internal and external employment of tonics and stimulants is indicated. The following plans and remedies are said to have been used with success:—bathing the feet and parts about the pubes with cold water; introducing cold injections into the bladder; laying in the vagina a sponge, which has been filled with cold water; pumping cold spring water upon the pubes and perineum; giving, every four hours, half a drachm of alum with ten grains of gum arabic; using as a lotion, which is to be applied externally, or within the vagina by means of a sponge, a liquor composed of wine, brandy, and a decoction of astringent herbs; exhibiting bark internally; applying a blister upon the sacrum, or perineum, repeatedly; giving from fifteen to thirty drops of the tincture of cantharides with some lac amygdalæ; placing the parts about the pubes in a shower bath; electricity; frequently rubbing the spine and sacrum with a stimulating liniment, composed of cocoa, butter, and the oils of lavender and nutmegs, or else of hartshorn and spiritus serpilli; administering chalybeates, &c.

Whenever the weakness or paralysis of the sphincter vesicæ occurs, merely as a symptom of another disease, the first indication is to endeavour to remove this last affection; and then if the paralysis of the sphincter should continue, the surgeon is to try some of the preceding tonic and stimulating remedies.

The long enumeration which we have given of methods which have been practised with success, may be likely to create indecision, with respect to such plans as claim the preference. We have no hesitation, then, in declaring our belief, that the records of surgery, and the lessons of daily experience, are most strongly in favour of applying blisters to the sacrum, and bathing the region of the pubes, and the perineum with cold spring water. The efficacy of blisters, in this species of the disorder, is surprisingly displayed in a series of successful cases, related in the Medical Observations and Inquiries. We have also a high opinion of the internal employment of the tincture of cantharides, with bark and steel medicines, especially when aided by electricity, or frictions of the spine and sacrum with a stimulating liniment.

When the disorder proves incurable, the surgeon always has it in his power to recommend some apparatus for lessening the inconveniences with which the patient is annoyed. A thing which answers the purpose in male subjects, is a sort of flask or bottle, which is to be placed in such a manner that the urine may run into it, by which means all bad smell, uncleanness, and wetness will be avoided. The flask must also be so put on as not to be irksome to the patient when he moves about. That which is described in Juville's *Traité des Bandages*, consists of three pieces; namely, an ivory mouth, an elastic gum-neck, and a silver body. The vessel is fastened by means of tape to a leathern girt, which goes round the waist. The ivory mouth is round, and about eighteen lines in diameter. Its external margin is furnished with several small apertures, through which the tapes are intended to pass. Its inner surface is slightly excavated, so that it fits more exactly on the parts about the pubes. Its external surface is a little convex, and provided with a projecting arm, which is here and there perforated, and is designed for having the elastic gum-neck attached to it.

The neck of the apparatus must be made of a single piece

of elastic gum, without any seam, about four or five inches long, and of sufficient breadth to contain the penis. The lower end of this tube is screwed to the silver body of the instrument. At the top of the screw part of the body are three pins, which internally cross each other, in the form of a star, and are intended to support a bit of sponge that is put within the neck. In the silver receptacle is a funnel, the lower end of which is furnished with a valve. The silver part of the instrument is flat, four inches broad, and when the apparatus is put on, always lies at the inside of the thigh, in a small pocket made in the patient's breeches for its reception. The sponge, in the elastic tube, and the valvular funnel, in the silver receptacle, effectually prevent any return and escape of the urine, which would otherwise happen when the patient raises his thigh, or sits down. When the body of the instrument is full, it is to be screwed off, and emptied; nor is there the least occasion to take off the whole of the apparatus. On certain occasions the patient, if he chooses, can screw on a receptacle of larger size.

It has been objected to instruments of the preceding description, that they cannot be constantly retained upon the part, taken off and on, and carried about by the patient, without great trouble and inconvenience. Hence some surgeons have given the preference to an instrument, whereby the penis and urethra may be gently compressed, so as to retain the urine in the bladder, and discharge it, by day or night, at pleasure, (as is asserted,) with little more trouble than in the ordinary way, by opening and shutting the little, light, and easy instrument called a yoke. Nuck was the inventor of a famous contrivance of this kind, which is represented in the plates of Heister's system of surgery, together with another yoke, devised by the latter practitioner himself. See *Tab. 26. figs. 8, and 9.*

It is justly remarked by modern writers, that the jugum penis hardly admits of being worn when there is a tendency to erections; and, in other cases, the machine is always apt either to make too little pressure, so as not to restrain the urine, or else too much, so as to produce pain.

To female patients, the foregoing contrivances are, of course, totally unadapted, and, in this sex, it is somewhat difficult to obviate and diminish the inconveniences arising from an incontinence of urine. Sponge, which has commonly been introduced within the vulva, is of little use; for it must be taken out, and replaced again, exceedingly often, or else, in consequence of its becoming quickly full of urine, this fluid runs down as fast as if no means at all were taken to hinder such annoyance. Besides, when the patient sits down, the urine is partly pressed out of the sponge, and, making its escape, wets the clothes, and causes much uncleanness. This circumstance led to the idea of compressing the female urethra against the os pubis, so as to close the passage, and several instruments for this purpose have been invented and recommended. One of the simplest instruments of this sort is a pessary, which is made very convex on the side towards the os pubis, so as to compress the meatus urinarius against this bone; and, in order that the pressure may neither be too powerful nor too feeble, we are particularly advised to employ pessaries made of elastic gum.

Default assures us, that the objects in view are best fulfilled by an instrument, which has a steel spring, resembling that of a common truss, and extending round the pelvis. In the middle of the spring, precisely over the symphysis pubis, is a metallic plate, from which proceeds downwards a long, narrow, somewhat curved piece of steel, on the

lower end of which is fixed a pad, designed for pressing the meatus urinarius against the os pubis. In order that the degree of pressure may be more nicely regulated, the long steel branch may be constructed with a hinge, or joint, at its middle. The upper part of this piece of steel ought to project a little beyond the lower portion, so as to allow a screw to be placed in it, whereby the lower bit of steel, and the pad belonging to it, may be pressed, in the requisite manner, towards the os pubis. (See *Journal de Médecine*, tom. iii.) A similar, but apparently a still more commodious instrument of this kind, is described by Le Rouge in the *Journal de Médecine, Chirurgie, et Pharmacie*, tom. lxxvii. p. 459.

Experience alone can determine whether such inventions will answer the intended purpose. Richter apprehends, that the constant pressure must, at length, prove painful, and that, if it were not strong, it could not hinder the urine from escaping. Reasons of this sort have induced some writers to recommend the employment of a flask, or receptacle for the urine, as well for female as male patients. An apparatus has been invented, consisting of a bandage, that passes round the body, and is provided with an elastic piece of steel which descends over the mons veneris, and presses an oblong tin funnel against the orifice of the meatus urinarius. A bit of sponge is placed within the funnel, and projects a little over its edge, being calculated to lie upon the opening of the urethra, imbibe the urine, and conduct it into the funnel, from which it drops into a bladder, or skin pouch, purposely placed for its reception. (Bötticher, vom Chirurgischen Verbands.) As the preceding apparatus must, in all probability, put the patient to inconvenience when she sits down, Richter suspects, that it might be best to introduce into the urethra a flexible catheter, the lower end of which is to be fastened to Juville's flask, after being properly fixed in the manner described in speaking of the latter apparatus. The receptacle can easily be retained on the inside of the thigh.

Having treated of the incontinence of urine, attended with a paralysis of the sphincter vesicæ, we shall next speak of that species of the disorder which has been called *spasmodic*, and usually arises from the operation of some irritation or another upon the bladder. In a case of this nature, it is always a chief indication to discover and remove, if possible, the active irritation, which, according to surgical authors, may be of several kinds: worms, hemorrhoids, cold, suppression of the menses, a calculus in the bladder, an abscess near the anus, &c. The treatment must, of course, be subject to considerable variety. When the particular nature of the irritation cannot be detected, the practitioner must employ general anodyne and antispasmodic remedies, opium, the warm bath, &c. In these cases, the uva ursi has been prescribed with infinite advantage. The present sort of incontinence of urine occasionally occurs merely as a symptom of epilepsy, hysteria, &c. In this circumstance, the treatment is to be entirely directed against the original disease. The disorder is frequently produced by pressure on the bladder, and therefore we see it brought on by polypi of the uterus, pregnancy, or a descent of the womb.

The third species of incontinence of urine, or that to which patients are only subject in the night-time, cannot always be regarded as a disease. In young subjects, the case is usually one of the three following kinds: the boy either neglects to get up, when he feels an inclination to make water; or he sleeps so soundly, that he is utterly insensible of the calls of nature; or lastly, he dreams that he

is making use of a chamber-pot, and empties his bladder, as it were, voluntarily. The first of these cases requires proper advice, and, if that will not do, moderate chastisement. The second, it would certainly be the height of absurdity and cruelty to endeavour to obviate by corporal punishment; it is a true infirmity, incidental to childhood, and commonly disappearing as the boy grows a little older. The application of punishment to the third instance is likewise quite irrational and improper. Children liable to the nocturnal incontinence of urine, ought rather to be kept from drinking too late in the evening, and care should always be taken to make them use the chamber-pot before they are put into bed. The children also, if possible, should be waked in the course of the night, in order that they may make water.

When adults are troubled with the infirmity, or children continue afflicted, notwithstanding the trial of ordinary plans, a quarter of a grain of the pulv. cantharid. may be administered, every evening, in some milk of almonds. When this plan fails, we have reason to suspect, that the incontinence of urine is owing to the operation of a preternatural irritation on the bladder. In this circumstance, if relief is to be derived from medicines, it must be from such as opium and ipecacuanha.

In obstinate cases, it has been suggested, that benefit might be derived from advising the patient to retain his urine a good deal in the day-time, by which means the bladder, being accustomed to hold a considerable quantity of fluid, would not be so prone to contract in the night-time for the expulsion of a small quantity.

Should all the above methods prove ineffectual, the only resource left is to put on the patient, just before bed-time, one of the machines already described in a previous part of the present article.

In the particular case, where a fistulous communication exists between the bladder and vagina, in consequence of ulceration, or sloughing, if the aperture will not heal by making the patient lie a good deal on the abdomen, we may scarify the sides of the opening, and endeavour to make them unite with a suture. Perhaps, in some instances, the opening might be healed by touching it with caustic, making the patient lie upon her abdomen, and keeping a catheter, as much as possible, in the urethra.

INCONTINENCY, in a moral sense, is of divers kinds; as in cases of bigamy, rapes, sodomy, or buggery, getting bastards; all which are punished by statute. See 25 Hen. VIII. cap. 6. 18 Eliz. cap. 7. 1 Jac. I. cap. 11. Incontinency of priests is punishable by the ordinary, by imprisonment, &c. 1 Hen. VII. cap. 4.

INCORPORATION, formed from *in*, and *corpus, body*, the mixing the particles of different bodies so together, as to make an uniform substance or composition of the whole, without leaving any possibility of discerning the ingredients or bodies mixed, in any of their particular qualities.

INCORPORATION, in *Law*. See **CORPORATION**.

INCORPOREAL, SPIRITUAL; a thing, or substance, which has no body. See **SPIRIT** and **BODY**.

Thus the soul of man is incorporeal, and may subsist independently of the body. See **SOUL**.

Those ideas which are independent of bodies, can neither be corporeal themselves, nor be received within a corporeal subject: they discover to us the nature of the soul, which receives within itself what is incorporeal, and receives it in a corporeal manner too; whence it is, that we have incorporeal ideas even of bodies themselves. Fenelon.

INCORPOREAL Inheritance, in *Law*. See **INHERITANCE**.

INCOR-

INCORRUPTIBLE, that which cannot be corrupted. See **CORRUPTION**.

Thus spiritual substances, as angels, human souls, &c. and thus also glass, gold, mercury, &c. may be called incorruptible.

INCORRUPTIBLES, **INCORRUPTIBLES**, the name of a sect which sprang out of the Eutychians.

Their distinguishing tenet was that the body of Jesus Christ was incorruptible; by which they meant, that after and from the time wherein he was formed in the womb of his holy mother, he was not susceptible of any change or alteration; not even of any natural and innocent passions, as of hunger, thirst, &c. so that he eat without any occasion, before his death, as well as after his resurrection. And hence it was that they took their name.

INCRASSANTS, or **INCRASSATING MEDICINES**, in the language of the old writers, and of the humoral pathology, such medicines as were imagined to condense or thicken the

blood and humours, which were of a morbidly thin or fluid consistence. Both the diseased condition, and the operation of medicines upon the fluids, were probably equally gratuitous. See **HUMORAL Pathology**.

INCREASING FAULT, in *Mining*, is applied by Mr. Farey in his Report on Derbyshire, vol. i. p. 122, to describe those dislocations of the strata, which are not alike in all parts of the same fault, but increase in proceeding one way along the fault, and decrease, or derange the measures, a less number of fathoms, yards, feet, &c. in proceeding in a contrary direction: the phenomena attending this important class of faults, are described in the volume above quoted, and their application to mineral surveying is shewn.

INCREMENT, **INCREMENTUM**, in *Rhetoric*, a species of climax, gradually rising from the lowest to the highest. Such as that of Seneca: "Turpissima tamen est jactura, quæ per negligentiam venit: et, si volueris attendere, magna vitæ pars elabitur male agentibus, maxima nihil agentibus, tota aliud agentibus." See **CLIMAX**.

END OF VOL. XVIII.



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